SCOPE AND SPECIFICATION

Flood Damaged Roads Restoration

Zone 5 North and Zone 5 South

VOLUME 3 OF 4

Tropical Cyclone Kirrily
January 2024

ESC.0044.2324.U.REC

CONTRACT Nos.
Zone 5 North – ESC2024-041
Zone 5 South – ESC2024-042

CONTRACT SERVICES

Etheridge Shire Council is seeking tenders from appropriately qualified contractors to complete works associated with Contracts ESC2024-041 and ESC2024-042 – Flood Damaged Road Restoration in Etheridge Shire.

The Contract works will be provided in accordance with the tendered Schedule of Rates as submitted in *Schedule K1 Contract Works Pricing Schedule and Schedule K2 Additional Works Pricing Schedule*.

Tenders ESC2024-041 and ESC2024-042 – Flood Damaged Road Restoration will provide for two separate Contract agreements.

- ESC2024-041 – Flood Damaged Road Restoration – Zone 5 North
- ESC2024-042 – Flood Damaged Road Restoration – Zone 5 South

Tenderers shall note that while the Contract works are intended to be awarded as two separate agreements, this does not preclude Tenders from submitting Tenders for one or both zones, if they have the capacity and capability to complete the Contract Works by the specified Date for Practical Completion.

SCOPE AND SPECIFICATION DOCUMENTS

This Volume 3 Scope and Specification document comprises of and is to be read in conjunction with the following documents:

- Volume 3 Scope and Specification.
- Applicable Main Roads Technical Specifications.
- Far North Queensland Regional Organisation of Councils Specifications.
- Full treatment meanings as required under QRA legislation.
- Etheridge Shire Council detailed maps.

CONTRACT SPECIFIC CLAUSES

SECTION 1 – GENERAL – PRELIMINARIES

1.1 SCHEDULE OF RATES CONTRACT

The Contractor shall note that the basis of the Contract is a schedule of rates, tendered to complete a defined body of work as detailed in Schedule K1 Contract Pricing Schedule and Schedule K2 Additional Works Pricing Schedule.

1.2 EXTENT OF WORKS

The works to be completed under the contract are specifically designed to address damaged caused to road infrastructure as a result of natural disasters. The extent of work is based on approvals provided by Etheridge Shire Council and the Queensland Reconstruction Authority.

1.3 SITE LOCATION MAPS

Maps are provided detailing the Contract worksite locations, along with Principal owned and/or managed gravel pits. The Contractor shall note that the maps are provided for information, planning and visual reference purposes only. Due to changes to the specified works, which may occur throughout the contract period and the lead up to it, the maps must not be relied upon by the Contractor as the sole source of information beyond the tender period.

The Contractor shall ensure that only the infield application program is used to determine and confirm the current extent of approved works during the Contract Period.

The maps are provided in Appendix A.

1.4 SCOPE OF WORK

General

General works across all sites include but are not limited to the following works.

- Development, implementation and management of site specific Temporary Traffic Management Plans.
- Development, implementation and management of site specific Safe Work Method Statements.
- Development, implementation and management of site specific environmental controls.
- Site establishment.
- Management and maintenance of the worksite.
- Site disestablishment and clean up.

Treatment Schedule

All works associated with this Contract relate to the approved standard road maintenance and reconstruction treatments detailed in the Queensland Government's Queensland Reconstruction Authority Treatment Guide 2021-21 (QRA Treatment Guide). The QRA Treatment Guide is provided as a reference in Appendix B.

Contractors shall note the inclusion of the Contract Treatment Code reference in the table below. The Contract Treatment Code is also referenced in the contract pricing schedules. For all work delivery purposes and on site the Contract Treatment Code will be used rather than the standard QRA Treatment Code.

The treatment list provided below details the type of works approved for delivery across the three contract packages. It must be noted that not all treatments detailed below have been approved for completion across the three contract packages. The Contract Bill of Quantities details the approved treatments and their extent at each site.

Contract Treatment Code	QRA Treatment Code	QRA Treatment Guide Page	Standard Treatment
BFI	BKF_IMP	23	Bulk fill - imported
BFL	BKF_LOC	23	Bulk fill - local
RRC	CON_RCN	26	Reconstruct reinforced concrete
RFC	CON_RFC	26	Repair with flowable concrete
DDS	CUL_SIL	27	Desilt drainage structure - removal of silt and debris
CMD	EXC_HVC	24	Clear mixed debris and remove from site
BER	EXC_RSOS	24	Bulk excavate surplus material and remove from site
BES	EXC_RSS	24	Bulk excavate surplus material to spoil
RCS	RFD_RCS	32	Replace sign (complete) - standard road sign, includes post
RGP	RFD_RP	32	Replace guide posts or markers
RSF	RFD_RSF	32	Replace sign face only - standard road sign
HSG	SPR_HSG	21	Heavy shoulder grading - incorporating 50mm of imported material
ER	SPR_PER	16	Edge Repair
POT	SPR_POT	15	Pothole repair <1m2
RUGB	SPR_RB	19	Reconstruct unbound granular base. Excludes seal
RUGP	SPR_RR	19	Reconstruct unbound granular pavement. Excludes seal
BSS	SPR_RSSR	22	Bitumen spray seal, 2-coat
ISS	SPR_STB	17	In-situ stabilisation - including 50mm corrector. Excludes seal
GMS	USP_GMS	11	Gravel/material supply
GR100	USP_GR100	12	Gravel Resheeting 100mm
GR150	USP_GR150	12	Gravel Resheeting 150mm
HFG	USP_HFG	10	Heavy formation grading
HFG50	USP_HFG50	10	Heavy formation grading incorporating 50mm of imported material
HFG75	USP_HFG75	10	Heavy formation grading incorporating 75mm of imported material
MFG	USP_MFG	9	Medium formation grading
RTD	USP_RSTD	13	Reshape table drain (1 side)

1.5 RESTRICTIONS ON WORKS

The Contractor shall be restricted in the works to be performed under this Contract as follows:

- Roads shall be returned to normal traffic operation outside of working hours and/or during any time that the Contractor is not undertaking works at the site;
- Access to properties shall be maintained at all times throughout the period of the Contract.
- The Contractor shall provide a minimum of 48 hours notice to landowners of any works that will affect the owner's access. Work on the notified owner's access shall not commence prior to the 48 hours notice period, unless the Contractor has written permission from the owner;

- No works on the roads shall occur between Saturday 21 December 2024 and Sunday 12 January 2025 inclusive. All sealed road works shall be sealed and safe to use for the travelling public during the Christmas/New Year holiday period without the need for ongoing monitoring by Council or the Contractor's personnel.
- No works on the roads shall occur over the Easter period between Thursday 17 April 2025 and Tuesday 22 April 2025 inclusive. All sealed road works shall be sealed and safe to use for the travelling public during the holiday period without the need for ongoing monitoring by Council or the Contractor's personnel.
- Claims for extra payment arising from these restrictions and any other restriction outlined in the Specification will not be considered.

1.6 CONTRACTORS REPRESENTATIVE

The Contractor shall nominate, in writing, an authorised representative for the Contract. The nominated representative shall be a person an experienced delivering similar Contract works.

The Contractor's nominated representative shall act as the primary contact for the Superintendent's Representative and be responsible for administering the Contract.

The Contractor's nominated representative shall supervise all subcontractors during delivery of the Contract Works. All queries from sub-contractors shall be directed to the Superintendent's Representative via the Contractor's representative.

1.7 CONTRACTOR CONTACTS

The Contractor shall provide phone and email contact details to enable the Contractor's nominated representative to be reliably contacted both within and outside of business hours.

The Contractor shall also supply the Superintendent's Representative with all key personnel's contact details to enable efficient contract management in addition to alternative contact options should the nominated representative be unavailable.

1.8 Q LEAVE LEVY PAYMENT

The contractor shall be responsible for meeting all requirements and payment of the Q Leave Levy for the personnel it employs.

1.9 CONTRACT MANGEMENT PLAN SUBMISSION, REVIEW AND ENDORSEMENT

Management Plan Submission

The Contractor shall prepare and submit the following management plans to the Superintendent's Representative for review and endorsement, prior to the commencement of work on site:

- Work Health and Safety Management Plan
- Fatigue Management Plan
- NHVR Chain of Responsibility Plan
- Environmental Management Plan
- Quality Management Plan
- Temporary Traffic Management Plan

Each management plan shall comply with all relevant legislative and regulatory requirements, industry standards, and the specific requirements detailed in this Contract.

Superintendent Endorsement

The Superintendent's endorsement of the submitted management plans shall signify that the plans have been reviewed to ensure they meet the general requirements of the Contract. The endorsement does not imply approval or acceptance of responsibility for the content or implementation of the plans.

The Contractor shall remain fully responsible for the adequacy, implementation, and management of all endorsed plans, and shall ensure that all construction activities are conducted in accordance with the endorsed plans.

Revisions and Updates

The Contractor shall promptly revise and update the management plans as necessary to address any changes in scope, site conditions, or regulatory requirements. All revisions and updates shall be submitted to the Superintendent's Representative for review and endorsement prior to implementation on site.

The Contractor shall maintain records of all revisions and provide the Superintendent's Representative with updated copies of the endorsed plans.

Non-Compliance

Failure by the Contractor to submit the required management plans for review and endorsement or to implement the endorsed plans in accordance with the requirements of the Contract may result in the suspension of work, withholding of payments, or other remedies available to the Superintendent under the Contract.

Contractor's Responsibility

The Contractor acknowledges that the preparation, submission, and implementation of the management plans are solely the responsibility of the Contractor. The Superintendent's endorsement of the management plans does not relieve the Contractor of any responsibilities or liabilities under this Contract.

General Management Plan Requirements

The Contractor shall comply with any reasonable direction given by the Superintendent or their representatives relating to the effective and appropriate implementation of management plan requirements.

The Contractor shall comply with the requirements of all local, state and federal legislation and regulations associated with the management and delivery of the Contract Works. All costs associated with the Contractor's compliance with these obligations shall be included in the tendered Contract rates.

1.10 NHVR CHAIN OF RESPONSIBILITY AND FATIGUE MANAGEMENT

NHVR Chain of Responsibility

Etheridge Shire Council considers the National Heavy Vehicle Regulator (NHVR) Chain of Responsibility regulations to be an important aspect of road safety for heavy vehicles and other road users. Etheridge Shire Council requires its contractors to implement, operate and maintain a comprehensive NHVR Chain of Responsibility Plan which helps to keep all road users safe.

Notwithstanding the requirements of Clause 1.10 the Contractor shall supply its Chain of Responsibility Plan to the Superintendent's Representative for review and endorsement prior to the commencement of work on site.

The Contractor shall ensure that all work associated with the delivery of Contract Works involving the use of heavy vehicles is undertaken in accordance with the requirements of the Chain of Responsibility Plan and NHVR law.

The Contractor shall record and maintain all records associated with its implementation and compliance with the NHVR Chain of Responsibility Plan. The Contractor shall make all information and records available for audit and inspection if requested.

Fatigue Management

Etheridge Shire Council recognises that fatigue is an important consideration within the overall management of work health and safety. This is particularly the case with the long distances within the Etheridge region. This means fatigue can be a significant factor when ensuring that Contract Works are completed in a safe and efficient manner, while ensuring that all personnel arrive home safely, regardless of the distance they are required to travel.

Notwithstanding the requirements of Clause 1.10 the Contractor shall supply its Fatigue Management Plan to the Superintendent's Representative for review and endorsement prior to the commencement of work on site.

The Contractor shall ensure that all work associated with the delivery of Contract Works involving the use of heavy vehicles is undertaken in accordance with the requirements of Work Health and Safety legislation and the Fatigue Management Plan.

The Contractor shall record and maintain all records associated with its implementation and compliance with the Fatigue Management Plan. The Contractor shall make all information and records available for audit and inspection if requested.

1.11 BIOSECURITY MANGEMENT

The Contractor shall take reasonable and practical steps to address and/or mitigate biosecurity risks. The Contractor shall manage and implement its biosecurity obligations under the Biosecurity Act 2014 (QLD) and the Etheridge Shire Council Biosecurity Plan 2022 Onwards.

The Contractor shall be aware of the potential risks associated with carriers and the movement and sourcing of materials, vehicles and machinery and the disturbance, import or export of soils. The Contractor shall ensure that where necessary appropriate measures are implemented that reduce or eliminate, where practicable, the chance of biosecurity risks being exacerbated or a contravention occurring.

1.12 TEMPORARY TRAFFIC MANAGEMENT

The Contractor shall supply, install and maintain all temporary traffic management (TTM) required to complete the Contract Works safely, in accordance with the adopted Temporary Traffic Management Plan (TTMP). The Contractor shall ensure that the endorsed TTMP and installed TTM meets the requirements of the Australian Standard AS 1742 "Manual of Uniform Traffic Control Devices" and the Queensland Department of Transport and Main Roads "Manual of Uniform Traffic Control Devices, MUTCD, Part 3 – Work on Roads.

The Contractor shall ensure that the worksite shall be left safe for traffic overnight and when the site is unattended. Any hazards shall be clearly signposted and appropriate traffic management provided.

The Contractor shall ensure that all excess materials from its works are removed from the road surface and disposed of in a suitable manner to the satisfaction of the Superintendent's Representative while the site is unattended and at the completion of work on site.

1.13 ACCOMMODATION CAMPS

Accommodation camps supplied by Contractor to house personnel delivering Contract works are to be fully self-contained and managed by contractor.

The Contractor shall only use approved locations for camps. The Contractor shall seek approval from the Superintendent for all proposed camp locations prior to the commencement of work on site. The Contractor shall ensure that the camp extent does not encroach or impact on previously uncleared or unused areas of land. In particular the Contractor shall ensure that no damage to the environment or disturbance to cultural heritage sites and/or artifacts occurs.

The Contractor shall ensure that all sites used for camps are left in a clean and tidy manner. All litter and waste produced by the Contractor's personnel in a camp shall be collected and managed by the Contractor and disposed of in an approved manner in accordance with ESC guidelines.

1.14 COMPLAINTS

The Principal will pass on to the Contractor the details of all complaints received, which are associated with the works. The Contractor shall maintain a record of all complaints received via the Principal or from members of the public. The Superintendent's Representative must be advised of all complaints received by the Contractor at the earliest possible opportunity.

The Contractor shall, if the complaint is genuine and with basis, respond to and address the cause of the complaint at the earliest possible opportunity. The Contractor shall notify the Superintendent's Representative when the cause of the complaint has been resolved and the details of the resolution.

1.15 APPROVALS AND OTHER LAW

Definitions

In this clause:

Approvals means *certificates, licenses, accreditations, clearances, authorisations, consents, permits, approvals, determinations and permissions from any Authority and any related fees and charges*; and

Authority means *any Federal, State, or local government authority, administrative or judicial body or tribunal, department, commission, agency, government owned corporation, statutory body or instrumentality or any other person having jurisdiction*.

Identifying, obtaining and maintaining Approvals

The Contractor shall identify and notify the Principal of all Approvals which are necessary for the proper completion of Contract Works (other than Approvals which the Principal has advised the Contractor it has already obtained). The Contractor must obtain and maintain all such Approvals until all of the Contractor's other obligations under the Contract are complete. The cost of obtaining and maintaining all such Approvals shall be borne by the Contractor.

Compliance

The Contractor shall and must ensure that its Personnel comply with all Approvals and other laws which are in anyway applicable to the delivery of the Contract Works, including, unless the Contract expressly provides otherwise, by paying all fees, royalties, levies, charges, costs, expenses, taxes or duties.

Obtaining or Granting of Approvals by Principal

The Principal gives no warranty and makes no representation that it will be able to obtain, or obtain within any particular timeframe; or where the principal is the relevant Authority, that it will grant, any Approval required for the Contractor to perform the Services.

No fetter

Nothing in the Contract shall be taken to fetter the power, rights or authority of the principal as the sublessor under the *Land Act 1994 (Qld)* or an Authority under the *Local Government Act 2009 (Qld)*, the Local Government.

SECTION 2 – GENERAL – SERVICE LEVELS AND QUALITY

2.1 SERVICE LEVEL, SCOPE AND QUALITY

The Contractor shall ensure that the specified Contract Works are delivered in accordance with the requirements of the Contract, within the required timeframe and to the required quality standards. The table below details the requirements and standards, against which the Contractor will be assessed.

The Superintendent's Representative will review the Contractor's delivery performance of the Contract Works against the following Service Levels at the frequency stated in the table below. The Superintendent may seek a written explanation and proposed solution from the Contractor if any Service Levels detailed below are breached or the completed work does not meet the specified standards.

Service Level	Requirement	Review Period
Delivery of program accepted by superintendent	As per contractor program supplied at time of tender award	Reviewed at progress meetings held at start of each agreed day of roster commencement.
Scope of works delivery	In accordance with scope "long form" of each treatment type. Refer Appendix B QRA Treatment Guide	Review at daily inspections with Superintendent Representative
Quality of works	In accordance with FNQROC and MRTS Specifications	Review at daily inspections with Superintendent Representative

2.2 QUALITY AND CONFORMANCE

The Works Under Contract will be supervised by the nominated Superintendent's Representative(s).

The Contractor shall report to Superintendent's Representative daily regarding the progress and completion of works on site. The Contractor shall submit for review on a weekly basis, on the first working day of the week, as a minimum, the previous weeks tip and load sheets, and water usage records.

The Superintendent's Representative will be required to sign off Hold Points and complete Inspections of the Contractor's works at the times and work stages detailed below. The Contractor shall provide 48 hours notice when the works are ready for hold point or final inspection.

Work	Work Stage	Inspection / Hold Point
All works	Lot Identification	Hold Point
	Set out of works	Hold Point
Subgrade / Embankment	Subgrade preparation (shape, level and density)	Hold Point
Material Quality (All Works)	Use of quarry or material source	Hold Point
	Compliance of all materials prior to their haulage to the works	Hold Point
	Pavement density (proof roll)	Inspection

Work	Work Stage	Inspection / Hold Point
Pavement (in addition to Subgrade)	Geometry (finished surface shape, alignment and level)	Inspection
	Depth of granular pavement material	Inspection
All Works	Non-conformance to any specified criteria	Hold Point
	Final Inspection prior to practical completion	Hold Point
	Practical Completion prior to leaving the site	Inspection

SECTION 3 – GENERAL – SITE WORKS

3.1 WORKS PROGRAM AND PROGRESS

Works Program

The Contractor shall submit to the Superintendent's Representative for review, a detailed works program within ten days of the date of contract award. The works program shall include the following information:

- Detailed activities for all construction works.
- Activity dependencies.
- Critical path activities identified for the Works and any Separable Portion of the Works.
- Activity duration indicating the start and finish dates for each activity.
- Milestones which identify significant events including completion of Separable Portions.
- Allowance for adverse weather.
- Non-work periods.

The Contractor's works program should reflect delivery from furthest site to the closest, where possible, to avoid cartage over recently completed work.

The Contractor shall ensure that all works are complete on each road and have been approved by the Superintendent's Representative prior to work commencing on a new road.

The submitted construction program will be reviewed by the Superintendent's Representative. If the Superintendent's Representative considers that the submitted works program or any subsequent revision does not show sufficient details, or is impractical, or does not comply with the requirements of the Contract, or will not result in completion of the Contract Works by the Date for Practical Completion, the Superintendent may direct the Contractor to revise and resubmit to the Superintendent an amended works program within five business days for further review.

Works Progress

The Superintendent's Representative will monitor the Contractor's progress against the agreed works program throughout the contract period.

The Contractor shall note that if the Principal or Superintendent is not satisfied with the Contractor's progress compared to the agreed works program, the Contractor will be requested to demonstrate how the works will be brought back onto schedule.

If the Contractor is unable or unwilling to bring the works back onto schedule in accordance with the agreed works program to the satisfaction of the Principal or Superintendent, or if it is considered that the work cannot be completed by the Date for Practical Completion, additional resources may be procured by the Principal, and a separable portion of the Contract Works may be awarded to a third party to meet works delivery time constraints.

3.2 ADVERSE WEATHER

Notwithstanding the requirements of Clause 34A Delay Costs the Contractor shall make allowance in the submitted works program for adverse weather and the effects of the adverse weather. The Contractor shall make the following allowances for adverse weather in the submitted works program.

Work Zone	Adverse Weather Allowance
Zone 5 North	15 working days
Zone 5 South	10 working days

The Contractor shall note that the Contract adverse weather allowance is concurrent and applies individually to each work zone package. If a Contractor is awarded multiple work zone packages the Contractor is not entitled to claim cumulative adverse weather days beyond the contract allowance.

The adverse weather allowance does not include allowance for periods when works are suspended due to adverse weather. This allowance is included in the Contract duration and is not to be construed as the actual time lost due to adverse weather conditions likely to be encountered during the Contract.

The Contractor's representative shall notify the Superintendent's Representative immediately of any time lost due to adverse weather conditions and shall confirm such notification in writing within five business days. The confirmation shall provide details of the nature and extent of delays and the construction activities affected. The Superintendent, if satisfied that the Contractor has taken reasonable steps to minimise the period of delay, will certify at the end of each month an appropriate period of time lost and will issue to the Contractor a monthly summary of certified time lost. The maximum period of time which will be certified on any working day will be ten hours.

Where the Contractor is required to provide a construction program, only delays affecting critical activities will be considered as time lost due to adverse weather conditions.

If the total period of time certified exceeds the total allowance for the Contract Works specified above, the Superintendent's Representative will, in accordance with the General Conditions of Contract, grant an extension of time for completion of the Contract Works on the basis of one working day for each ten hours of certified time in excess of the allowance. No extension of time will be granted until the total excess period equals ten hours or a multiple thereof. Periods of less than ten hours' duration shall accrue to form part of any subsequent extension of time.

No additional payment for costs arising from extensions of time granted due to excess adverse weather will be made.

3.2 COMMENCEMENT OF WORK

The Contractor shall provide 72 hours' notice of the intention to commence work on a new road. Notification shall be provided to the Superintendent's Representative in writing.

3.3 WORK TIMEFRAMES

Notwithstanding the requirements of Clause 39.2 Contractor's Default Parts c) and d) the Contractor shall ensure that all works are completed in a timely and efficient manner to enable overall Contract timeframes to be met.

3.4 WORK TO BE DONE BY OTHERS

The Contractor shall note that amongst other activities, Etheridge Shire Council has routine maintenance contractors for road work. Etheridge Shire Council also employs its own maintenance crews who also maintain the road network. The Contractor may from time to time be required to share use of the worksite and stockpile sites with other contractors and/or Council work crews.

The Contractor shall ensure it does not delay or hinder the works of others and works collaboratively with other contractors and Council personnel to enable all works to be delivered in a safe and efficient manner.

3.5 UTILITY SERVICES

The Contractor shall be responsible for identifying utility services on site and any special requirements the various utility service authorities have concerning works in the vicinity of their assets.

The Contractor shall take account of any identified restrictions to the works when pricing work packages. Any costs associated with complying with the identified restrictions shall be included in the quotes for the relevant work package and identified as a separate cost.

The Contractor shall also note and account for the presence of private utilities within the road reserve, such as water supply pipes for stock or irrigation purposes. The Contractor shall note that private utilities of this nature are unlikely to be present on Before You Dig plans. The Contractor shall ensure that appropriate measures are taken to ensure that any such utility services are not damaged as a result of the Contract Works.

3.6 ELECTRONIC RECORDS AND INFIELD APP

The Principal, via the Superintendent's Representative, uses an infield data capture and works management application. The data collected by the application program is used to provide reports internally, and externally to other agencies, on the progress of Contract works. The Contractor and its personnel shall be required to use the application program daily as part of works delivery.

The app is used to provide and confirm information about the approved works along with recording the completed works, materials used and problems encountered. The app will also be used by the Superintendent's Representative to record inspections completed and final approval of completed works for payment claims.

The Contractor shall supply suitable Android phones or tablets to site personnel to enable the application program to be installed and appropriate login details provided.

The Superintendent's Representative will provide training to the contractor's personnel on the usage and Principal's expectations of application program. Additional training relating to the usage and expectations for the application program will be provided as required by the Superintendent's Representative.

The application used by Etheridge Shire Council is Fulcrum App.

3.7 WORK SET OUT AND LOT IDENTIFICATION

The initial identification and set out of work sites will be undertaken by the Superintendent's Representative. The set out will include the following:

- Queensland Reconstruction Authority site Identification number
- Chainage start and end.
- Direction of works.
- Treatment type – (QRA) Contract Treatment Code.

Appendix C contains an example template depicting the standard manner in which pegs are set out and the detail contained on them.

The Contractor shall check and confirm all work details at each site, prior to the commencement of work at a site. If discrepancies are identified, they shall be immediately communicated to the Superintendent's Representative and direction sought.

3.8 GRANULAR PAVEMENT MATERIAL SOURCES AND ACCESS

Granular pavement material shall be sourced from Principal nominated gravel pits, unless directed otherwise by the Superintendent's Representative. The nominated source of granular pavement material for each worksite is detailed in Schedule K1 Pricing Schedule. Granular pavement material shall be won, crushed, screened, stockpiled, loaded and supplied to worksites by the Contractor.

Granular Pavement Material Procurement

The Contractor is responsible for the procurement of granular pavement materials from the nominated gravel pits. Work to procure granular pavement materials shall include but not be limited to:

- Winning bulk materials from unworked areas of the gravel pit.
- Crushing the won materials to reduce the material size.
- Screening the crushed materials to ensure it meets the required specification.
- Stockpiling the screened materials to allow easy and efficient access.
- Loading the materials for delivery to the work site.

- Delivery to the work site.

The Contractors shall provide at least 72 hours notice to the Superintendent's Representative of the intention to procure material from a nominated gravel pit.

Granular Pavement Material Records

The Contractor shall record the quantity of all material sourced from each gravel pit. The quantity measure shall be recorded via the weight of material removed from the pit.

The Contractor shall keep records of all granular pavement material used for the delivery of the Contract works. All records shall be supplied to the Superintendent's Representative within 48 hours of material removal. The records supplied shall detail the following information as a minimum:

- Quantity of material loaded and delivered to site.
- Source of the materials.
- Location that the material is being delivered to.
- Roads used for carting materials.

Gravel Pit Access

The Contractor shall be responsible for facilitating access to the nominated pit. The Contractor shall maintain the access road to the pit and ensure no damage occurs from the extraction operations to support the Contract works. The Contractor shall undertake any required maintenance to the access road before, during and upon completion of the extraction operations to ensure safe access to the pit is maintained.

Gravel Pit Completion Works

Upon completion of extraction operations the gravel pits used to deliver the Works Under Contract shall be treated in the following manner:

Exhausted Pits

Pits which have exhausted their material allocation shall be tided and rehabilitated by the Contractor as instructed by the Superintendent's Representative.

In-Use Pits

Pits which will remain in-use following the completion of the Works Under Contract shall be tided by the Contractor with unused materials stockpiled for future use. The gravel pit and its access shall be left in a neat, tidy and safe manner to enable efficient future use of the pit and any remaining material.

3.9 PAVEMENT AND MATERIALS TESTING

The Principal may elect to undertake material and/or pavement testing throughout the Contract Period on any of the worksites. The Principal will pay the costs associated with completion of the testing work.

The Contractor shall ensure the Principal is afforded the time and safe worksite area to undertake the required material sampling and/or testing. The Contractor shall not be entitled to costs or an extension of time to provide the assistance and/or worksite area required to facilitate the testing work to be completed.

The Contractor shall be responsible for all costs associated with the rework or replacement of sub-standard materials and/or completed work where test results do not meet the specified limits.

The Contractor shall ensure that only fit-for-purpose materials which meet the specification requirements are utilised to deliver the Contract works. If materials are identified, without testing occurring, that appear to not meet the required quality or specification requirements, the Contractor will be required to provide test results to prove suitability or replace the materials at its expense with mutually agreed suitable materials.

3.10 WATER PROCUREMENT

The Contractor shall be responsible for sourcing and supplying all water required for completion of the Contract works.

Creeks and Rivers

Extraction of water from creeks and rivers will require a written permit from the relevant authority. The Contractor is responsible for applying and obtaining any permit(s) to extract the water required to complete the Contract works. The Contractor shall pay all costs associated with obtaining and meeting the ongoing compliance requirements of the permit(s). The Contractor shall supply a copy of the permit to the Superintendent's Representative within ten working days of its receipt and prior to the extraction of any water.

Private Sources

If the Contractor wishes to obtain water from private property, the Contractor shall negotiate the use and extraction of the water with the property owner. The Contractor shall pay all costs sought by the property owner for the extraction and use of the water. The Contractor shall ensure the details of the agreement with the private property owner are documented in writing. The Contractor shall supply a copy of the written agreement to the Superintendent's Representative within ten working days of the agreement's finalisation and prior to the extraction of any water.

3.11 HAUL ROADS

The Contractor shall be responsible for the condition and maintenance of haul roads used for the delivery of the Contract works. Maintenance works shall include, but not be limited to:

- The use of water carts to maintain the road surface and for dust suppression.
- Grading of the road surface to remove potholes, corrugations and reinstate shape.

The Contractor shall complete prior to the use of all haul roads an existing condition report to identify the current condition. The Contractor shall repair, at its cost, any damage caused by haulage operations.

Haulage of materials shall not occur during the following periods or situations:

- Without a road use agreement when a road is closed to heavy vehicles.
- During periods of wet weather.
- On roads affected or damaged by wet weather.
- Between the hours of 6pm and 6am during delivery of the Contract works.

3.12 TURN AROUND FACILITIES

Contractors shall only utilise existing turnaround facilities across the Principal's road network. The Contractor shall not form new turnaround facilities unless specific approval for each facility is provided in writing by the Superintendent's Representative.

The Contractor's Tendered rates shall include all costs associated with material haulage and trafficking between turnaround areas. The Contractor shall make allowance for any impact on production rates and the Contract program of the need to account for any extra distance and inefficiencies introduced by the location of approved turn around facilities.

SECTION 4 – FORMATION CONSTRUCTION

4.1 UNSUITABLE SUBGRADE MATERIAL

The Contractor may encounter patches where the road subgrade material is unsuitable for pavement restoration works to occur upon. Where directed by the Superintendent's Representative the Contractor shall remove unsuitable subgrade material to an agreed depth. The Contractor shall seek approval from the Superintendent's Representative prior to replacement of subgrade material as to the suitability of the excavation subgrade.

The Contractor shall place and compact, at optimum moisture level, all materials in layers not greater than 100mm compacted depth.

SECTION 5 – TECHNICAL SPECIFICATION

5.1 TECHNICAL SPECIFICATION

The technical specifications that will define the standard of work are detailed below in Section 5. The basis of the technical specifications lie within this section, relevant TMR Standards (MRS and MRTS standards and Standard Drawings). The MRTS standards are available at:

http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Standard-specifications-roads.aspx

The Works Under Contract will be defined by one, several, or possibly all of paragraphs in Section 5. Work may also be defined by MRS, MRTS specifications, TMR Standard Drawings and the FNQROC Specification. Where ambiguity exists between the requirements of standards, the priority will be as follows:

1. The Specification
2. The Drawings
3. FNQROC Specification
4. TMR Specifications

5.2 ACTIVITIES

The following operations shall be included as part of all Activities:

- Site establishment and disestablishment of all plant, labour and materials including site camp.
- Implementation of project management plans including provisions for (but not limited to) workplace health and safety, traffic control, environmental protection and quality.
- Set out of the work area.
- Locate and protect all underground services prior to excavations, compactions.
- Certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance, and audit testing.
- The clean-up of the site including the disposal of any waste/removed material in accordance with any State Government legislation or Local Government By-laws that are applicable.

5.3 MEDIUM FORMATION GRADING

5.3.1 Description

The grading of unsealed formation to reinstate the correct profile to ensure drainage of the pavement and shoulders and to provide a suitable running course. This activity does not include the addition of imported gravel/material from outside of the worksite to build up existing material.

The treatment of the adjacent surface drainage such as table drains and outlets known as diversion drains, other than to reform profile, is excluded from here. Refer to Heavy Formation Grading.

5.3.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The de-grassing, light tyning/roughening of running surface and shaping of the existing pavement.
- The grading of the existing pavement including watering and compaction.
- The trimming and rolling to correct profile of the compacted formation.
- All other operations included in the Applicable Specification.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.3.3 Applicable Specifications

- MRS 02 and MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 51 Environmental Management

5.3.4 Restoration Standard

The formation cross fall measured using the grader blade or other means shall be within 4% to 6%. Superelevation on curves shall be 4% to 6% also. No water shall pond on the surface. The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement. The cross section shall be visually uniform.

5.3.5 Activity Item and Unit of Measurement

Medium Formation Grading m

5.3.6 Testing Requirements

Geometrics	
Horizontal, width compliance check	1 test per 100m
Crossfall primary	1 test per 100m (3 points across width)
Construction	
Proof roll (GVM 20t vehicle)	No visible vertical movement

5.3.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.4 HEAVY FORMATION GRADING

5.4.1 Description

The grading of unsealed formation to reinstate the correct profile to ensure drainage of the pavement and shoulders and to provide a suitable running course. This activity does not include the addition of imported gravel/material (separate item – refer .5.3). This Activity also includes the treatment of the adjacent surface drainage such as table drains and outlets known as diversion drains.

5.4.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The de-grassing and tyning (100 to 150mm allowable) of the existing pavement, the incorporation of gravel (supplied to the work site under Activity 5.3 or other, if indicated on the Works Order, or won from site - displaced) and watering, mixing, compaction and trimming of the pavement material.
- The trimming and rolling to shape the compacted formation surface.
- The cleaning and reshaping of adjacent surface drainage lines such as table drains and diversion drains.
- The adequate erosion and sediment control within the drain as per current environmental protection standards
- All other operations included in the Applicable Specification.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.4.3 Applicable Specifications

- MRS 02 and MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 51 Environmental Management

5.4.4 Restoration Standard

The formation cross fall measured using the grader blade or other means shall be within 4% to 6%. Superelevation on curves shall be 4% to 6% also. No water shall pond on the surface. The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement. The restored layer shall have a minimum depth of 75mm. The cross section shall be visually uniform. The restoration standard of the adjacent surface drainage shall be the same as per the applicable Activity Code.

5.4.5 Activity Item and Unit of Measurement

Heavy Formation Grading m

5.4.6 Testing Requirements

Geometrics	
Horizontal, width compliance check	1 test per 100m
Crossfall primary	1 test per 100m (3 points across width)
Vertical, straight edge	1 test per 100m (L & R) (max deviation from a straight edge < 8mm).
Construction	
Proof roll (GVM 20t vehicle)	No visible vertical movement

5.4.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Electronic copies of photographs must be received

by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.5 FORMATION GRADING MATERIAL SUPPLY

5.5.1 Description

The supply to the work site of gravel / material such as select fill that may be required to reinstate the correct profile and level. Also refer to 5B Material Supply.

5.5.2 Work Operations

The following operations shall be included as part of this Activity:

- The provision of traffic control for quarrying, cartage and delivery operations.
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.5.3 Applicable Specifications

- MRTS 02 Provision for Traffic.
- MRTS 03 Drainage, Retaining Structures and Protective Treatments.
- MRTS 04 General Earthworks.
- MRTS 05 Unbound Pavements.
- MRTS 51 Environmental Management.

5.5.4 Restoration Standard

Nil (supply only).

5.5.5 Activity Item and Unit of Measurement

Gravel Supply m3 (compacted)

5.5.6Testing Requirements:

Material is to be in accordance with AARB material standards, see section 5.B Material Supply for (Unsealed Roads) further details.

Material	
Grading (Q103A)	2/source/contract batch
Linear Shrinkage (Q106)	2/source/contract batch
CBR (Q113A)	2/source/contract batch
Approval for use	
All materials need to be approved for use by the Superintendent prior to use	

5.6 GRAVEL RESHEETING (VARYING DEPTHS)

5.6.1 Description

The addition of imported gravel / material to the running surface to reinstate to the correct profile/height above the natural surface, improve the quality of the surface material or to obtain an acceptable running course depth. Includes de-grassing, scarifying and preparation of the existing formation and the incorporation of water and proper compaction of the formation and imported gravel/materiel.

5.6.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The de-grassing and tyning of the existing pavement, the supply, cartage and incorporation of gravel (maximum depth of additional layer to be 150 mm) and water, mixing compaction and trimming of the pavement material.
- The gravel material shall be tipped in a continuous and neat windrow along the shoulder of the roadway. A minimum width of 3.5m smooth, gravel free and safe traffic lane shall be allowed at all times for traffic vehicles with the adequate signage in place as per the MUTCD Part 3.
- The trimming and rolling to shape of the compacted re-sheeted formation.
- All other operations included in the Applicable Specification.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.6.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management

All grass and other vegetation shall be removed from the work area and disposed of in an approved manner. The existing formation material shall be shaped to form a surface parallel to the planned finished surface of the shoulder. This surface shall be wide enough to enable the completed formation to conform to the cross-section shape specified in the contract. Where the reformed surface is greater than 75 mm below the planned finished surface, the surface shall be watered and compacted to a firm condition with no visible vertical movement under the compaction equipment before material is added. Where the reformed surface is less than 75 mm below the planned finished surface, the surface shall be scarified to a depth of 75 mm below the planned finished surface and watered to enable compaction after new material has been added.

5.6.4 Restoration Standard

The formation cross fall measured using the grader blade or other means shall be within 4% to 6%.

Superelevation around curves shall also be 4% to 6%.

No water shall pond on the surface.

The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement. The cross section shall be visually uniform.

5.6.5 Activity Item and Unit of Measurement

Gravel Resheeting –150mm m3 (compacted)

Gravel Resheeting –100mm m3 (compacted)

5.6.6 Testing Requirements

Material is to be in accordance with AARB material standards, see section 5.B Material Supply (Unsealed Roads) for further details.

Material	
Approval for use	All materials need to be approved for use by the Superintendent prior to use.
Construction	
Segregation (Grading) – Visual	1/500m of road
Compaction subgrade	Proof roll (GVM 20t vehicle) – no visible deflection
Compaction pavement	Proof roll (GVM 20t vehicle) – no visible deflection
Geometrics	
Horizontal, width compliance check	1 test per 100m
Crossfall primary	1 test per 100m (3 points across width)
Vertical, straight edge	1 test per 100m (L & R) (max deviation from a straight edge < 8mm).
Depth	Material Delivery dockets to verify quantity. Layer thickness 1 test per 100m (+10mm / -0mm)

5.6.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Depths of treatment photographs are required every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.7 BULK FILL

This item applies in respect of:

- Bulk Fill - Local
- Bulk Fill – Imported (> 10m3) – Select Fill Class B material
- Bulk fill – Selected Fill Material – Select Backfill Material

5.7.1 Description

The addition of imported select fill material for backfilling scours, washouts or loss of formation. Construction of embankments are also included within this activity.

5.7.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The benching into firm material, removal of unsuitable material, compaction of foundations.
- The de-grassing, scarifying and preparation of the existing formation and the incorporation of water and adequate compaction of the formation and imported Class B (>CBR 15) Select Fill material or Selected Backfill Material as required.
- The supply, cartage and incorporation of Class B (>CBR 15) Select Fill material or Selected Fill
- Material and water as required.
- The compacting of Class B (>CBR 15) Select Fill or Selected Fill Material in layers as per Main Roads Technical Standard “MRTS04 General Earthworks - Table 15.3 A – Layer thickness for compaction.”
- The trimming and rolling to shape of the compacted restored formation and surrounding disturbed area.
- All other operations included in the Applicable Specification.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.7.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management

All grass, other vegetation and unsuitable material shall be removed from the work area and disposed of in an approved manner. Benching into the existing formation is required to tie in the new embankment. The foundation or base of the embankment zone shall be compacted prior to placement of fill in layers. This surface shall be wide enough to enable the completed formation to conform to the cross-section shape specified in the contract.

5.7.4 Restoration Standard

The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement.

The cross section shall be visually uniform and transition neatly into the existing adjoining profile.

5.7.5 Activity Item and Unit of Measurement

5.5a Embankment – Bulk (>10m3) – Select Fill Class B material m3 (compacted)

5.5b Embankment – Detail (<10m3) – Select Fill Class B material m3 (compacted)

5.5c Embankment – Bulk – Selected Fill material m3 (compacted)

5.5d Embankment – Bulk – Local m3 (compacted)

5.7.6 Testing Requirements

Material is to be in accordance with AARB material standards, see section 5.B Material Supply for further details.

Material	
CBR	Q113A: 2/source/contract batch
Material Classification	2/source/contract batch
Approval for use	All materials need to be approved for use by the Superintendent prior to use. See section 5.B Material Supply for further details.
Construction	
Compaction	Proof roll (GVM 20t vehicle) – no visible deflection
Proof Roll (GVM 20t vehicle)	no visible vertical movement
Geometrics	
Horizontal, width compliance check	Visual – Uniform surface / neat transition
Depth	Material Delivery dockets to verify quantity.

5.7.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Sufficient assessment photographs of completed works to confirm extent (including depth) of works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.8 HEAVY SHOULDER GRADING - RURAL

5.8.1 Description

The grading of unsealed shoulders located in a rural environment (greater than 60 kmph speed restriction) to reinstate the correct profile. This activity does not include the addition of imported gravel/material. This activity does include the treatment of the adjacent surface drainage.

5.8.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The de-grassing and tyning of the existing shoulder (including the winning of any suitable material on site adjacent to the width of the shoulder to be maintained), the incorporation of gravel (supplied to the work site under Activity Code 5.3, if indicated in the contract, or won from site) and watering, mixing, compaction and trimming of the shoulder material.
- Brooming of the sealed surface to remove any loose material.
- All other operations in the Applicable Specifications.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.8.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management

5.8.4 Restoration Standard

At the sealed/unsealed interface, the finished unsealed surface shall be even and within +0, -10 mm of the height of the adjacent seal. Shoulder cross fall measured using the grader blade or other means shall be within +0, -2% (absolute) when compared to the cross fall of the adjacent sealed pavement.

Note:

Where the cross fall of adjacent sealed pavement is so irregular that the + 0, - 2% (absolute) standard cannot be achieved, the cross fall on the finished unsealed surface shall be consistent with allowing the free drainage of water off the sealed pavement. In general, the width of the finished shoulder shall not exceed:

- 3m where seal width is less than 4.5m
- 2m where seal width is between 4.5 and 5.6m
- 1.5m where seal width is greater than 5.6m

See "Notes on Finished Cross Sections" below.

The graded surface shall be watered and rolled to provide a sound tight surface. No loose material shall be left on the sealed carriageway, in drains or around roadside furniture. The surface of the sealed carriageway shall not be damaged

Notes on Finished Cross Section

Suitable material which may exist outside the required shoulder width, and which is winnable, should be considered for use for shoulder re-sheeting before additional material is brought to the site.

Bus pull off areas or widened shoulders at intersections and turnouts are not to be reduced in width and shall be included in the work activity. Where the width of the existing shoulder being graded is less than the width specified previously under this Section, the width of the existing shoulder need not be increased to the width given, except where this will be done at no additional cost to the Principal. Confirmation of width required must be sought in writing from the Superintendent in cases of discrepancy between onsite conditions and scope requirements in the contract. Overall, finished shoulder width shall be constant and within +300mm/-100mm of the width nominated in the contract.

5.8.5 Activity Item and Unit of Measurement

Heavy Shoulder Grading Shoulder - Rural Shoulder m - side

5.8.6 Testing Requirements

Construction	
Compaction pavement	Proof roll (GVM 20t vehicle) – no visible deflection

Proof roll	Vehicle approved by Superintendent – No vertical movement Proof rolling is to be completed for all areas in between the compaction tests and is to be signed off on the contractors Inspection & Test plans
Geometrics (required on both subgrade and finished pavement level)	
Horizontal, width compliance check	1 test per 100m (+300mm / - 100mm)
Vertical primary	1 test per 100m (3 points across width) (+/-0.5%)
Vertical, straight edge	1 test per 50m (L & R) (max deviation from a straight edge < 5mm).

5.8.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.9 RESHAPE TABLE DRAINS

5.9.1 Description

The cleaning and reshaping of existing surface drains adjacent to the road formation. Does not include work done on drainage lines treated under Activity Code 5.2, Heavy Formation Grading.

This Activity includes where necessary, removal and reinstatement of guide posts and signs.

5.9.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and reinstatement of roadside furniture (e.g. guide posts, signs, etc.) as required.
- The removal of vegetation and debris on work area.
- The adequate erosion and sediment control within the drain as per current environmental protection standards.
- The restoration of the drain to the specified standard, including the cut to fill earthworks, trimming and disposal of all necessary material.
- All other operations included in the Applicable MRTS Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.9.3 Applicable Specifications

- MRTS 02 - Provision for Traffic
- MRTS 03 - Drainage, Retaining Structures and Protective Treatments
- MRTS 04 - General Earthworks
- MRTS 51 - Environmental Management
- TMR Standard Drawing – 1178 'Diversion of Water – Diversion of water from roadway and table drains'

5.9.4 Restoration Standard

The drain shall be constructed as per the requirement in the contract. It is recognised in some cases where a shoulder has insufficient width (which cannot be corrected because of physical constraints), it is desirable to lessen the restoration depth and/or batter slope to ensure the drain itself remains trafficable (i.e. 600mm wide, 150mm deep, batter slope 1 on 4.) In this instance, the installation of the drains shall be undertaken to a standard that does not lessen the trafficable surface which is currently available to the road users (i.e. the existing shoulder and/or trafficable drain batter shall remain trafficable). The motorists should not perceive that the trafficable width has altered. The drain shall be free of all material that could block the flow of water into the drain and along it. The base shall be evenly sloped to allow water to flow to the outlet. The base of the drain shall be at least 500 mm below the edge of the road shoulder (for earth drains).

5.9.5 Activity Item and Unit of Measurement

Reshape Table Drains Linear/m

5.9.6 Testing Requirements

Geometrics	
Cross section (Depth, Invert width, Total width, transverse & longitudinal grade)	1 per 100 metres
Water Ponding, no ponding of water	Visual test

5.9.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.).

Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Depths of treatment photographs are required every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.10 RESURFACE - BITUMEN SEAL (2 COAT)

5.10.1 Description

The treatment of the roadway surface using certified sprayer and plant, bitumen and precoated screenings.

5.10.2 Work Operations

The following operations shall be included as part of this Activity:

- Preparation of the surface, including the installation of offset points for the spotting of the centre and edge lines upon completion of the reseal works.
- Preparation of a suitable seal design, to the satisfaction of the Superintendent. This seal design is to be based on test results of aggregate from the project stockpile.
- The supply, carting, heating and spraying of a bitumen seal coat (including cutter and additive) at the design spray rate.
- The supply, carting, spreading and rolling etc., of a precoated aggregate, at the design spread rate
- The supply and installation of TRPM's or line spotting as required.

- All other operations in the Applicable Specifications (i.e. MRTS 02, 11, 22 etc.) for this Activity (e.g. sweeping, incorporation of cutter and additive etc.).

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.10.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 11 Sprayed Bituminous surfacing (excluding emulsion).
- MRTS 12 Sprayed Bituminous Emulsion Surfacing
- MRTS 17 Bitumen
- MRTS 19 Bitumen Cutter and Flux Oils
- MRTS 21 Bituminous Emulsion
- MRTS 22 Supply of Cover Aggregate.
- MRTS 51 Environmental Management

5.10.4 Restoration Standards

Dimensions to be not less than 50mm, nor exceed by 150 mm, the length and width specified. To present a uniform appearance with close stone contact.

No loose material shall be left on the sealed carriageway. Install Temporary Raised Pavement Markers (TRPM's) and/or spotting if where line marking existed prior.

5.10.5 Activity Item and Unit of Measurement

Bitumen Seal (2 Coat) m2

5.10.6 Testing Requirements

Minimum test frequency:

Seal:

Approval of seal design by the Principal is required 10 working days prior to application of seal.

Cover Aggregate test requirements		
10% Fines	Q205B	1/source/contract
Wet/Dry Strength	Q205C	1/source/contract
Crushed Particles	Q215	1/source/contract
Weak Particles	Q217	1/source/contract
Particle size distribution	Q103B	1 per 400 t
Modified Tray Test	Q219	1 per 400 t
Degradation Factor min.	Q208B	1 per 400 t
Average Least Dimension	Q202B	1 per 400 t
Flakiness Index	Q201	1 per 400 t

Pre-coating	Q216	1 per 400 t
Bitumen sample		1 per tank
Roller Passes Min. Cutback, Multigrade and bitumen		6 passes
Roller Passes Min. Polymer Modified bitumen		9 passes
Application Rates -		Spread/Spray Records.
Field Spread Rate	Q711A	1/Day
Ball Penetration Testing (1 site patch)	Q706 or AG: PT/T251	

The testing requirements listed for all the materials above shall apply to the cumulative quantities used throughout the contract and not to specific lots. Where the individual site quantity does not reach the required testing frequency, the quantity shall be aggregated with other lot quantities from that specific supply source until such time as a test is required. Lot quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

5.10.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.11 STONE PITCHING (REPAIR)

5.11.1 Description

The supply and installation of stone pitching for surface protection from scouring typically located at batters, flood ways, culverts etc.

5.11.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The supply and installation of stone pitching shall be carried in accordance with MRTS 03 and MRTS 70.
- The rock shall be sound rock which does not disintegrate in water and which has been selected to match the existing rock pitching where appropriate.
- Cement mortar for bedding shall consist of 1 part by volume of Type GP cement to 3 parts by volume of clean fine sand with only sufficient water added to achieve a plastic like texture. The mortar shall be able to retain it shape and not flow like liquid.
- The surface preparation prior to stone pitching.
- Grouted rock pitching shall be constructed in accordance with applicable standard drawings.
- Rock protection shall have a uniform appearance overall, and shall not have noticeable overall irregularities in horizontal and vertical alignments.
- All other operations included in the applicable MRTS Specifications.

Where clarification of details in relation to these Work Operations is required, the following applicable specifications provide additional requirements for compliance.

5.11.3 Applicable specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 Earthworks
- MRTS 70 Concrete
- MRTS 51 Environmental Management

5.11.4 Restoration Standard

As per the applicable specifications.

Surface finishing (open / closed) face is to match the surrounding stone pitching. Where no existing stone pitching is evident the default is closed face. Leave work site safe and tidy. Remove all loose material; no material shall be left in place that may block watercourses or drains.

Rock shall be clean, hard, dense and durable. In addition, it shall be resistant to weathering, free from overburden, spoil, shale, dust and organic matter. Rock that is laminated, fractured, porous, or otherwise physically weak shall not be used.

The stone sizes shall vary between 150 mm and 250 mm with no stones smaller than 150mm unless required for wedging. Stone shall, where possible, be angular/crushed but in no case shall their least dimension be less than half their greatest dimension.

5.11.5 Activity Item and Unit of Measurement

Stone pitching m3

5.11.6 Testing Requirements

Material	
Grout 1 part Cement GP / 3 parts sand by volume (no decomposed granite)	
Construction	
Surface preparation	Visual inspection – compacted, no loose / foreign material
Completed works	Visual inspection – stones well placed, uniform grouting, no loose stones

5.11.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.).

Sufficient assessment photographs of completed works to confirm extent (including depth) of works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.12 RECONSTRUCT ROADS

5.12.1 Description

Where extensive subgrade failure or material contamination has occurred, and the use of an overlay or stabilised layer cannot economically or suitably bridge the failure, reconstruction of the road will likely be required. Where road pavement damage such as peeling/stripping of seal (due to overland flow) or shallow pavement failures (i.e. above subgrade) have occurred, Reconstruct unbound granular base should be nominated. This treatment allows for repair/replacement of the top 150mm of unbound pavement ready for sealing. For treatment of localised areas of severely damaged or contaminated shoulders or verges, Reconstruct Unsealed Shoulder should be used.

5.12.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and reinstatement of roadside furniture (e.g. guide posts, signs, etc.) as required.
- The excavation of the failed area to the approved pavement design depth including the removal of any loose material from the area to be repaired.
- Compaction of the excavated surface (where the surface has been loosened)
- Preparation of the existing surface including brooming
- The formation of a vertical face to a minimum depth equal to the pavement design for the full length of the excavated edges. The repairs shall be rectangular in shape.
- Supply, placement and compaction of pavement material.
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.12.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 05 Unbound Pavements
- MRTS 11 Sprayed Bituminous surfacing (excluding emulsion).
- MRTS 12 Sprayed Bituminous Emulsion Surfacing
- MRTS 17 Bitumen
- MRTS 19 Bitumen Cutter and Flux Oils
- MRTS 21 Bituminous Emulsion
- MRTS 22 Supply of Cover Aggregate.
- MRTS 51 Environmental Management

5.12.4 Restoration Standards

As per above MRTS specifications.

The finished surface shall conform to the shape of the surrounding road surface.

The deviation from a 3m straightedge placed along the wheel paths shall be no more than + 8 mm, -5mm due allowance being made for design shape, where relevant.

5.12.5 Activity Item and Unit of Measurement

Reconstruct Road	m2

5.12.6 Testing Requirements

Material is to be in accordance with AARB material standards, see section 5.B Material Supply (Sealed Roads) for further details.

Materials	
Grading (Q103A)	1/source/contract batch
Liquid Limit (Q104A)	1/source/contract batch
Plasticity Index (Q105)	1/source/contract batch
Linear Shrinkage (Q106)	1/source/contract batch
Fines ratio (0.075 0.045)	1/source/contract batch
PI or LS x .425	1/source/contract batch
CBR (Q113)	1/source/contract batch
Approval for use	All materials need to be approved for use by the Superintendent prior to use.
Construction	
Segregation (grading) - visual	1/500m of road
Compaction formation	RDD Q141B & Q140A; CV >= 97% (standard) 1/1000m of road; Min. 2 tests/lot
Compaction pavement	RDD Q141B & Q140A; CV >= 100% (standard) 1/1000m of road; Min. 2 tests/lot
Proof roll	Vehicle approved by Superintendent – No vertical movement Proof rolling is to be done for all areas in between the compaction tests and is to be signed off on the contractors Inspection & Test plans
Geometrics (required on both subgrade and finished pavement level)	
Horizontal straightedge, (minimum 1 / patch in wheel path and at interface)	1 per 10m
Depth below road Surface	1 per 10m

5.12.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's).

Assessment photographs of completed works are required along the centreline at every 100m or part thereof. Depths of treatment photographs are required every 100m or part thereof. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.13 REPLACE GUIDE POSTS OR MARKERS

5.13.1 Description

The repair or replacement of guide markers to restore delineation of the road alignment. Excludes raised pavement markers.

5.13.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal of the damaged or worn components and disposal
- The supply and installation of new components including fittings
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.13.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRS 11.14 Road Furniture
- MUTCD

Delineators shall conform to the requirements of AS 1906 - Part 2 - 1981 "Retro reflective Devices (non-pavement applications)". Typically, delineators will be red on leading faces and white on the back face.

5.13.4 Restoration Standards

The guideposts shall be replaced to the requirements specified for road edge guide posts in MRTS14

Road Furniture and The Manual of Uniform Traffic Control Devices (Queensland) and as specified above.

5.13.5 Activity Item and Unit of Measurement

Replace Guide Posts or Markers each

5.13.6 Testing Requirements

Visual inspections to ensure the restoration standards are met.

Approval for use:

All materials need to be approved for use by the Superintendent prior to use.

5.13.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.).

Assessment photographs of completed works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.14 REPLACE HEAD/END WALL – CAST IN-SITU

5.14.1 Description

The installation or replacement In Part or in Full of In situ Reinforced Concrete Headwalls including any backfilling. Jointing, curing, stripping and foundation preparation all included.

5.14.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The removal of existing end structures to allow works to proceed followed by the trimming of the scoured profile to provide neatly battered slopes.
- The removal of vegetation and debris on work area
- Supply, cartage and placement of all materials required to construct the end structure.
- Construction of the replacement structure shall be in accordance with MRTS70 Concrete, MRTS71 reinforcing steel and DMR Standard Drawing No. 1304F (Headwalls).
- The supply and installation of formwork
- The supply and installation of steel reinforcement and jointing
- The saw cutting of the pavement and or existing concrete surfaces where required.
- The curing of the concrete surfaces in accordance with MRTS70
- The stripping and disposal of formwork, false work
- The backfilling with drainage media and pavement material where required
- The trimming and rolling to shape of the compacted formation.
- The reinstatement of pavement protection such as sprayed bitumen seal or asphalt in places demolished to construct the concrete works
- All other operations included in the applicable MRTS Specifications.

Where clarification of details in relation to the above Work Operations is required, the following applicable specifications provide additional requirement for compliance in these areas.

5.14.3 Applicable specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management
- MRTS 70 Concrete
- MRTS 71 Reinforcing Steel

5.14.4 Restoration Standard

The concrete shall be replaced, in full or in part, to the standards specified for new work in specification MRTS03 and the relevant Construction drawings/documentation in the contract. All rebound, overspray, dumped, cut-out concrete material and all excess material shall be cleared and disposed of in accordance with MRTS51 Environmental Management at an appropriate location.

The finished concrete surface shall be of neat appearance with lines generally conforming to the surface levels, i.e. flat surfaces on straight batters and curved surfaces where batters are curved.

Concrete strength shall be 32MPa with 20mm aggregate minimum. The tolerances of the finished surface shall be such that the gap beneath a straight-edge 2.0 m long placed anywhere on the finished surface shall not exceed 5 mm, due allowance being made for the design shape, where relevant. All reinforcement steel shall be provided sufficient cover and concrete finishing and curing operations carried out as per MRTS70 Concrete.

The replacement Structure shall be constructed to the specified geometry and standard so that it may carry out its purpose effectively.

5.14.5 Activity Item and Unit of Measurement

Replace head/end wall – cast in-situ m3

5.14.6 Testing Requirements

Material: Pavement material is to be in accordance with AARB material standards, see section 5.B Material Supply (Unsealed/Sealed Roads) for further details.

Materials: Concrete Aggregate	
Grading (Q103A)	1/stockpile
Liquid Limit (Q104A)	1/stockpile
Plasticity Index (Q105)	1/stockpile
Linear Shrinkage (Q106)	1/stockpile
Fines ratio (0.075 - 0.045)	1/stockpile
PI or LS x .425	1/stockpile
CBR (Q113A)	1/source/contract batch
Quarry Assessment Certification	1 per supplier
Materials: Concrete	
Concrete Mix design	Minimum - 32MPa / 20mm aggregate
Bedding Material: Sand	
Approvals for use	All materials need to be approved for use by the Superintendent prior to use. Allow 10 working days for mix design approvals.
Construction	
Subgrade Compaction	RDD Q141B & Q140A; Cv >= 97% (standard) Min. 2 tests/lot
Granular Pavement Compaction	RDD Q141B & Q140A; CV >= 100% (standard) 1/200m of road; Min. 2 tests/lot

Concrete	
Compressive testing of cylinders	1 x 7 day, 2 x 28 day, per agitator load
Slump	1 per agitator load, 80mm (+ / - 15mm)
Geometrics	
Horizontal	+ / - 10mm
Vertical, primary	+ / - 10mm
Steel reinforcement	All areas (+ / - 5mm)

5.14.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's).

Assessment photographs of completed works are required looking up each cell from the end structure. Also provide a photo which demonstrates site condition where replacement headwall was required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.15 REPLACE HEAD/END WALL – PRECAST

5.15.1 Description

The replacement or installation of culvert end structures to drainage structures. The supply and placement of backfill material to the structure.

5.15.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The removal of existing end structure (if applicable)
- The preparation of foundation
- The supply and installation of precast headwalls in accordance with MRTS 03.
- The backfilling with drainage media and pavement material where required
- The compaction and trimming to shape of any disturbed roadway formation including table drains, shoulders and carriageways.
- The reinstatement of pavement protection such as sprayed bitumen seal or asphalt in places demolished to construct the concrete works
- All other operations included in the applicable MRTS Specifications.

Where clarification of details in relation to the above Work Operations is required, the following applicable specifications provide additional requirement for compliance in these areas.

5.15.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 04 General Earthworks
- MRTS 70 Concrete
- MRTS 51 Environmental Management

5.15.4 Restoration Standards

As per above MRTS

Edges are to be squared and neat i.e. saw cut prior to excavation. The replacement Structure shall be constructed to the specified geometry and standard so that it may carry out its purpose effectively.

5.15.5 Activity Items and Units of Measurement

Supply and Install Sloping Culvert End Structures each

5.15.6 Testing Requirements

Minimum testing frequency: Materials:

Materials: Bedding/Haunch Zone/Overlay Zone and Side Zone	
Grading (Q103A)	1 per source/ contract
Linear Shrinkage (Q106)	1 per source/ contract
Dry Density-Moisture Relationship (Q142A)	1 per source/ contract
Geometrics	
Longitudinal Grade	0.5% minimum
Inlet	Invert Level within (+ / - 10mm)
Outlet	Invert Level within (+ / - 10mm)
Horizontal position	(+ / - 10mm)

5.15.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's).

Assessment photographs of completed works are required looking up each cell from the end structure. Also provide a photo which demonstrates site condition where replacement headwall was required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.16 PATCH REPAIRS (MAX 20 m^2)

5.16.1 Description

The repair of pavement and surfacing by removal of deteriorated pavement and surface and replacement with new pavement material and bitumen seal treatment, to profile. Includes restoration of seal surface

5.16.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and reinstatement of roadside furniture (e.g. guide posts, signs, etc.) as required.
- The excavation of the failed area to the approved pavement design depth including the removal of any loose material from the area to be repaired.

- Compaction of the excavated surface (where the surface has been loosened)
- Preparation of the existing surface including brooming
- The formation of a vertical face to a minimum depth equal to the pavement design for the full length of the excavated edges. The repairs shall be rectangular in shape.
- Supply, placement and compaction of pavement material. Preparation of the surface, including the installation of offset points for the spotting of the centre and edge lines upon completion of the reseal works.
- The supply and application of a bitumen seal treatment to profile
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.16.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 05 Unbound Pavements
- MRTS 11 Sprayed Bituminous surfacing (excluding emulsion).
- MRTS 17 Bitumen
- MRTS 19 Bitumen Cutter and Flux Oils
- MRTS 22 Supply of Cover Aggregate.
- MRTS 51 Environmental Management
- SS Premix Asphalt

5.16.4 Restoration Standards

As per above MRTS.

The finished surface shall conform to the shape of the surrounding road surface. The deviation from a 3m straightedge placed along the wheel paths shall be no more than + 8 mm, -5mm due allowance being made for design shape, where relevant.

5.16.5 Activity Item and Unit of Measurement

Patch Repairs m2

5.16.6 Testing Requirements

Material: Pavement material is to be in accordance with AARB material standards, see section 5.B Material Supply (Sealed Roads) for further details.

Materials: Concrete Aggregate	
Grading (Q103A)	1/source/contract batch
Liquid Limit (Q104A)	1/source/contract batch
Plasticity Index (Q105)	1/source/contract batch
Linear Shrinkage (Q106)	1/source/contract batch
Fines ratio (0.075 0.045)	1/source/contract batch

PI or LS x .425	1/source/contract batch
CBR (Q113A)	1/source/contract batch
Quarry Assessment Certification	1 per supplier
Approval for use	All materials need to be approved for use by the Superintendent prior to use

Construction	
Segregation (Grading) visual	1/500m of road
Compaction formation	RDD Q141B & Q140A; Cv >= 97% (standard) 1/500m of road. Min. 2 tests/lot
Pavement Compaction	RDD Q141B & Q140A; CV >= 100% (standard), 1/500m of road; Min. 2 tests/lot
Proof Roll	Vehicle approved by Superintendent – No vertical movement Proof rolling is to be done for all areas in between the compaction tests and is to be signed off on the contractors Inspection & Test plans
Geometrics	
Horizontal Straightedge	1 per 10m, (minimum 1 / patch in wheel path and at interface)
Depth below Road Surface	1 per 10m

5.16.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Assessment photographs, sufficient to allow verification of extent of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.17 POTHOLE PATCH – LARGE / SMALL

5.17.1 Description

The repair with asphalt or premix of an isolated hole or series of holes in the sealed roadway surface that is in otherwise sound condition

5.17.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal of any cracked or loose material from the area to be repaired
- The formation of a vertical face on the hole edges. The edges of the hole are to be cleaned and shaped in the form of a rectangle.
- The supply and application of a bitumen emulsion tack coat
- The supply, placement and compaction of the asphalt or premix
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.17.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 12 Sprayed Bituminous Emulsion
- MRTS 21 Bitumen Emulsion
- MRTS 30 Dense Graded Asphalt Pavements
- MRTS 51 Environmental Management
- SS Premix Asphalt

5.17.4 Restoration Standards

As per above MRTS specifications.

The finished surface shall be within ±5mm of the height of and conform to the shape of the surrounding road surface. The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions of the restored surface. No loose material shall be left on the sealed roadway.

5.17.5 Activity Item and Unit of Measurement

Pothole Patch – Large (≥500mm x 500mm) each

Pothole Patch – Small (≤500mm x 500mm) each

5.17.6 Testing Requirements

Visual Inspection

5.17.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's).

Assessment photographs, sufficient to allow verification of extent of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.18 DEMOLITION OF EXISTING CONCRETE ELEMENTS (INCLUDING REINFORCED)

5.18.1 Description

The demolition, removal, and disposal of concrete elements.

5.18.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- Carry out all operations associated with the demolition of concrete including saw cutting where required
- During work operations no damage shall result to adjacent work.
- The removal and disposal of concrete.
- The compaction of gravel in layers greater than 75mm and less than 250mm.
- All other operations included in the applicable MRTS Specifications.

The cleanup of the site including the disposal of any waste/removed material and Concrete in accordance with MRTS51 Environmental Management and any State Government legislation or Local Government By-laws that is applicable.

Where clarification of details in relation to the above Work Operations is required, the following applicable specifications provide additional requirement for compliance in these areas.

5.18.3 Applicable specifications

- MRTS 02 Provision for Traffic
- MRTS 04 General Earthworks
- MRTS 51 Environmental Management

5.18.4 Restoration Standard

Saw cut and ensure adjoining structures to remain are not damaged. During work operations no damage shall result to adjacent work.

5.18.5 Activity Item and Unit of Measurement

Demolish Existing Concrete m3

5.18.6 Testing Requirements

Visual Inspection:

Work completed in accordance with work operations. Area clean and free of debris. Material disposed in appropriate manner.

5.18.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's).

Assessment photographs of pre-existing concrete element and adjacent areas accompanied by photographs of the completed works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims.

5.19 CLEARING OF MIXED DEBRIS MATERIAL

5.19.1 Description

The clearing of debris, vegetation, dense mixed material and silt impeding the free flow of water into and out of culverts, pipes and pits. Includes the loading, cartage from site and disposal (and any associated fees) of unsuitable material.

5.19.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal of vegetation and debris adjacent to inlets and outlets.
- The restoration of the drain cross-section to ensure flow of water to and from the outlet.
- Disposal of all necessary material.
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.19.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 51 Environmental Management

5.19.4 Restoration Standards

As per above MRTS. The inlets and outlets shall be free from all material that could block the free flow of water. The base shall be evenly sloped to allow water to flow to/from the outlet.

Sediment and material removed from the Culvert, Pipe or Pit, by means of excavation, flushing or otherwise. Material shall be captured and removed in accordance with MRTS51 Environmental Management.

5.19.5 Activity Item and Unit of Measurement

Clearing of Mixed Debris material m3

5.19.6 Testing Requirements

Visual Inspection per site

5.19.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Assessment photographs, sufficient to allow verification of extent of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.20 REPAIR OF CULVERTS AND PIPES

5.20.1 Description

All work associated with the repair or replacement of isolated sections of pipe / culvert damage. Includes excavation and exposure of damaged section. Includes backfilling to profile and the provision of associated inlet and outlet drains. Includes bitumen surfacing where required.

5.20.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and reinstatement of roadside furniture (e.g. guide posts, signs, etc.) as required.
- The excavation and exposure of the damaged section and removal of all necessary material

- The repair or replacement of the culvert or other drainage structure to the specified standard, including the excavation and removal of all necessary material.
- The trimming, compaction of the bottom of trench (if required).
- The supply and installation of bedding and haunch material (if required).
- The supply and reinstatement of suitable pavement material.
- The supply and application of bitumen surfacing where required
- All other operations included in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.20.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 05 Unbound Pavements
- MRTS 70 Concrete
- MRTS 51 Environmental Management

5.20.4 Restoration Standards

As per above MRTS specifications.

Edges are to be squared and neat i.e. saw cut prior to excavation. Surface finish is to be flush with surrounding existing surface. The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement. No water shall pond on the finished pavement surface above the installed pipe/s. The cross section shall be visually uniform to that shown on the relevant standard cross section and in compliance with the relevant MRTS specifications.

The grade of the replacement pipe shall match the existing/previous or adjoining pipe component such that a uniform grade is achieved and no ponding occurs along the length of the culvert structure. Where the fall of the pipe is not obvious, a level check shall be performed to determine the inlet and outlet arrangement and a minimum 0.5% grade shall be achieved.

5.20.5 Activity Item and Unit of Measurement

Replace RCP various linear m

5.20.6 Testing Requirements

Minimum testing frequency:

Materials- Pavement material is to be in accordance with AARB material standards, see section 5.B Material Supply (Unsealed/Sealed Roads) for further details.

Bedding/Haunch Zone/Overlay Zone and Side Zone	
Grading (Q103A)	1 per source/contract
Linear Shrinkage (Q106)	1 per source/contract
Dry Density-Moisture Relationship (Q110A)	1 per source/contract

Compaction foundation	(MDR) Q142A RDD Q141B & Q140A (CV >=95%) (1 test per pipe or 25m whichever is the lesser)
Compaction backfill	(MDR) Q142A RDD Q141B & Q140A (CV >=100%) (1 test per pipe or 25m whichever is the lesser)
Compaction base	(MDR) Q142A RDD Q141B & Q140A (CV >=100%) (1 test per pipe or 25m whichever is the lesser)
Geometrics	
Longitudinal Grade	0.5% minimum
Inlet	Invert level within (+/- 10mm)
Outlet	Invert level within (+/- 10mm)
Horizontal Position	(+/- 10mm)
Pipe/ inlet/ outlet clean and free draining with no ponding at the invert Visual Test 1/culvert	

5.20.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.).

Assessment photographs of completed works are required looking up each cell from the end structure. Also provide a photo which demonstrates site condition are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.21 ROCK PROTECTION

5.21.1 Description

The addition of imported crushed rock for backfilling scours and washouts. Scour protection is also included within this activity. This includes benching into firm material, removal of unsuitable material, compaction of foundations incorporating water where required. Shaping to the required profile and trimming the area surrounding the embankment where it ties in is also included. Rock fill shall be mechanically interlocked into place. Size of material is to be confirmed on site by the Superintendent.

5.21.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The removal of unsuitable material from the work area to an approved spoil location.
- The supply, cartage and placement of rock spalls conforming to Main Roads Technical Specification MRTS04 General Earthworks – 14.2.3 Rock Fill and 15.4 Mechanical Interlock Method of Construction."
- Compaction, trimming and rolling to shape of the compacted formation of the Rock fill.
- Other work required to bring the formation up to subgrade level shall be ordered separately.

- The trimming and rolling to shape of the compacted restored formation and surrounding disturbed area.
- All other operations included in the Applicable MRTS Specifications.

Where clarification of details in relation to these Work Operations is required, the Applicable Specifications below provide additional requirements for compliance. All excavated material shall be disposed of or stored in a neat and tidy environmentally acceptable manner, away from the road formation and drainage lines. Material suitable for reuse shall be stored at nominated stock pile sites unless otherwise agreed.

5.21.3 Applicable Specifications

- MRTS 02 Provision for Traffic.
- MRTS 03 Drainage, Retaining Structures and Protective Treatments.
- MRTS 04 General Earthworks.
- MRTS 05 Unbound Pavements.
- MRTS 51 Environmental Management.

All grass, other vegetation and unsuitable material shall be removed from the work area and disposed of in an approved manner. Benching into the existing formation is required to tie in the new embankment. The foundation or base of the embankment zone shall be compacted prior to placement of rock spalls in layers. This surface shall be wide enough to enable the completed formation to conform to the cross-section shape specified in the contract.

5.21.4 Restoration Standard

The finished formation shall have a sound tight surface with no visible vertical movement. The cross section shall be visually uniform and transition neatly into the existing adjoining profile.

5.21.5 Activity Item and Unit of Measurement

Rock Protection m3

5.21.6 Testing Requirements

Material:

Bedding/Haunch Zone/Overlay Zone and Side Zone	
Grading (Q103A)	2 per source/contract
Approval for use	All materials need to be approved for use by the Superintendent prior to use
Construction	
Geometrics	Visual inspection

5.21.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Assessment photographs, sufficient to allow verification of extent (including depth) of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.22 GEOFABRIC TEXTILE

5.22.1 Description

The supply and installation of geofabric textile A29 Bidum or equivalent as specified in locations in the contract.

5.22.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The supply, cutting to shape, overlapping / stitching as per manufacturers recommendations, labour to install
- All other operations included in the Applicable Specification

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.22.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 27 Geotextiles (Separation and filtration)
- MRTS 51 Environmental Management

Overlap wastage will not be paid separately, it is deemed to be included in rate of area specified in the contract.

5.22.4 Restoration Standard

Ensure embankment activities don't foul the placed geofabric including where sheets are joined.

5.22.5 Activity Item and Unit of Measurement

Geofabric textile	m2

5.22.6 Testing Requirements

Material:

Delivery docket	Copy to prove type of fabric supplied is correct

Approval for use:

All materials need to be approved for use by the Superintendent prior to use.

5.22.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Sufficient assessment photographs of completed works to confirm extent (including depth) of works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.23 IN SITU STABILISATION - CEMENT

5.23.1 Description

The stabilisation in place of a subgrade or an existing pavement by the addition of a hydraulic stabilising agent – Cement. 50mm nominal additional material for maintaining profile is included in this activity code. Sprayed bitumen seals or asphalt is not included here.

5.23.2 Work Operations

The following operations shall be included as part of the above Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The degrassing of the existing formation.
- Offsetting the centreline and edge lines for line marking purposes, if required.
- Binder content to be 2% by mass GB Cement. Variation to design to be approved by Superintendent.
- The supply and incorporation of paving material to maintain profiles where required.
- The supply and spreading of the stabilising agent – Cement as per specified dosage rates.
- The mixing of the stabilised material.
- The compaction of the stabilised material.
- The grading of the compacted pavement to the correct profile.
- Keeping the surface moist until the seal is applied.
- Installation of temporary line marking, spotting lines, temporary reflective pavement markers, delineation and other traffic control devices such as signage until pavement works are completed.
- All other operations in the Applicable Specifications.

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirements for compliance in these areas.

5.23.3 Applicable Specifications

MRTS 02 Provision for Traffic

MRTS 04 General Earthworks

MRTS 05 Unbound Pavements

MRTS 07 In-Situ Stabilised Pavements

MRTS 51 Environmental Management

The application rate shall not be allowed to exceed the nominated rate by more than 10 per cent. The stabilising agent incorporated in excess of the nominated rate shall be at no cost to the Principal.

5.23.4 Restoration Standard

The finished work shall meet the requirements of the relevant specifications and as provided here under. The deviation from a straightedge placed on the finished surface and the adjoining road surface shall not exceed 5 mm.

5.23.5 Activity Item and Unit of Measurement

In situ-Stabilisation - Cement	m2

5.23.6 Testing Requirements

Material:

For further detail material is to be in accordance with section 5.B Material Supply (Sealed Roads)

Material		
Approval for use	All materials need to be approved for use by the Superintendent prior to use.	
Construction		
Stabilising agent content	Field spread rate of solid stabilising agents - fabric mat Q719	1/day design +/-0.2% absolute
Nominal depth	150mm	N/A
Relative compaction	Q140A, Q141A, Q142A	CV >= 100% (STD) I per 500m²
Proof Roll	(GVM 20t vehicle) Vehicle approved by Superintendent	All sections No visible vertical movement.
Geometrics		
Horizontal, Width compliance check	1 per 50m	+0.2m/-0.0m
Vertical, Primary - Longitudinal join	1 per 50m	+/-5mm
Vertical, Primary, Thickness	1 per 25m	+10mm/-0mm
Additional, Crossfall	1 test per 50m	+/-0.5% Absolute
Additional, Deviation from a straightedge	1 Test per 50m	+/-5mm
Additional, Longitudinal Straightedge,	1 in wheel path & 1 in-between wheel paths at interface with existing road at start and end of section.	+/-8mm

5.23.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.)

Assessment photographs of completed works are required along the centreline at every 100m minimum. Depths of treatment photographs are required every 50m. Where works are limited to patches, assessment photographs, sufficient to allow verification of extent (including depth) of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.24 EXCAVATE BULK – ALL MATERIALS

5.24.1 Description

The excavation of all road materials within road reserve. Loading, cartage from site to disposal site and any associated disposal fees are included within this activity.

5.24.2 Work Operations

The following operations shall be included as part of this Activity:

- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required.
- The degrassing of the existing formation.
- Excavate, load, cart, disposal fees.
- Stockpile site management.
- Recording quantity, types, tip site location of loads spoiled from site in a waste register.
- Onsite spreading of material deemed suitable for filling on site.
- Ensuring the material won on from excavations is not contaminated with organic matter, foreign matter or other excavated material.
- The detailed trimming to profile in the contract of each excavation site.
- All other operations included in the Applicable Specification.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

5.24.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management

All grass and other vegetation shall be removed from the work area and disposed of in an approved manner. The existing formation material shall be shaped to form a surface parallel to the planned finished surface of the formation. This surface shall be wide enough to enable the completed formation to conform to the cross-section shape specified in the contract.

Material deemed unsuitable as per MRTS 04 is not included in this activity code. Over excavation required to provide access for machinery, plant, materials or labour shall not be paid separately by the principal and is deemed to be included in the agreed rates for excavation of quantities listed in the contract.

5.24.4 Restoration Standard

The formation cross fall measured shall be 3% to 5%. Superelevation on curves shall also be 4% to 6%. No water shall pond on the surface. The graded surface shall be watered and rolled to provide a sound tight surface with minimal loose stones and no visible vertical movement. The cross section shape shall be visually uniform to that shown in the contract. All excavations shall be backfilled within 48 hours. The base of excavations must always be free draining. The base is to be compacted sealed to restrict ingress of water and covered with water proof membrane. Surface water shall be diverted away from the excavation.

MUTCD guidelines must be implemented for all works including excavations. All excavations that aren't backfilled by end of work shift shall be battered 1 to 1 in addition to crash barrier / delineation requirements within MUTCD.

5.24.5 Activity Item and Unit of Measurement

Excavate Bulk (> 10m3) – all materials	m3 (compacted.)
Excavate Detail (< 10m3) – all materials	m3 (compacted.)

5.24.6 Testing Requirements

Geometrics	
Horizontal	1 test per 50m (+ 50mm / - 50mm)
Vertical	Depth of excavation every 50m and each side

5.24.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Sufficient assessment photographs of completed works to confirm extent (including depth) of works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.25 ASPHALT SURFACING ≤ 50mm THICKNESS

5.25.1 Description

Preparation of the existing surface, supply and application of tack coat, supply, laying and compaction of asphalt, line spotting as required.

5.25.2 Work Operations

The following operations shall be included as part of this Activity:

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- Preparation of the existing surface
- Supply and application of tack coat
- Supply, laying and compaction of asphalt
- Line spotting as required
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

5.25.3 Applicable Specifications

A) For surfacing on pavements with depth 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the requirements as specified in the "Asphalt Specification for Subdivision Pavements", published by the Australian Asphalt Pavement Association (Queensland Branch).

B) For surfacing on pavements with depths greater than 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the appropriate Main Roads Standard Specification.

- Main Roads Specification MRS 11.30 "Dense Graded Asphalt Pavements".
- MRTS 02 Provision for Traffic
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 51 Environmental Management

5.25.4 Restoration Standard

As per specification.

5.25.5 Activity Item and Unit of Measurement

Asphalt Surfacing m2

5.25.6 Testing Requirements

Tack coat grading / type	FNQROC / AP-PWT51/MRTS50
Tack coat Spray rate	FNQROC / MRTS11/05/30 / AP-PWT51
Tack coat temperature	FNQROC / MRTS11/05/30 / AP-PWT51
All material compliance tests	FNQROC / MRTS101-103-30 / AS/NZS 1141.17
Compaction	FNQROC / MRTS30/ AS/NZS 2891.2.2

5.25.7 Completed Work Evidence

All Hold point releases require GPS photographs with date, time, and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Sufficient assessment photographs of completed works to confirm extent (including depth) of works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates Also, field work complete, subject to any outstanding test results being within allowed tolerance.

5.26 FOAMED BITUMEN STABILISATION

5.26.1 Description

Where limited damage to the underlying subgrade has occurred, but loss of shape is extensive, In-situ stabilisation may be appropriate. In-situ Stabilisation using cement, fly ash or hydrated lime or Foamed bitumen stabilisation allow repair of damaged pavement without exposing the subgrade.

5.26.2 Work Operations

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- Removal of material not suitable for stabilisation,
- Import and spreading of Unbound granular material to replace unsuitable and for shape- correction (50mm),
- Pulverisation,
- Supply and spreading of stabilising agents,
- Stabilisation,
- Compaction and curing
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

5.26.3 Applicable Specifications

- MRTS 02 Provision for Traffic
- MRTS 04 General Earthworks
- MRTS 05 Unbound Pavements
- MRTS 07 In-Situ Stabilised Pavements
- MRTS 51 Environmental Management

5.26.4 Restoration Standard

The finished work shall meet the requirements of the relevant specifications and as provided here under.

5.26.5 Activity Item and Unit of Measurement

Foamed Bitumen Stabilisation - Cement m2

5.26.6 Testing Requirements

As per specification.

5.26.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.) Assessment photographs of completed works are required along the centreline at every 100m minimum. Depths of treatment photographs are required every 50m. Where works are limited to patches, assessment photographs, sufficient to allow verification of extent (including depth) of completed works, are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.27 LIGHT FORMATION GRADING

5.27.1 Description

Light trimming by grader of the existing roadway to fill holes and other depressions. For gravel roads damage as a result of an activated event, a Light formation grading is often undertaken during the emergency works period to restore rideability prior to restoration works. Where the road is formed only (not gravelled), and loss of shape and material is minor only, a Light formation grading may be appropriate for restoration works to restore shape.

5.27.2 Work Operations

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- Light trimming by grader of the existing roadway to fill holes and other depressions.
- Clean up of site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

5.27.3 Applicable Specifications

- MRS 02 and MRTS 02 Provision for Traffic
- MRTS 04 General Earthworks

- MRTS 51 Environmental Management

5.27.4 Restoration Standard

As per specification.

5.27.5 Activity Item and Unit of Measurement

Light Formation Grading m

5.27.6 Testing Requirements

Geometric controls.

5.27.7 Completed Work Evidence

As per inspection.

5.28 REPAIR ROAD SIGNAGE

5.28.1 Description

The repair of road signage to restore delineation of the road alignment.

5.28.2 Work Operations

The following operations shall be included as part of the above Activity:

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Repair road signage
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.28.3 Applicable Specifications

- MUTCD Manual of uniform traffic control devices
- MRTS14 Road Furniture

5.28.4 Restoration Standard

As per specification.

5.28.5 Activity Item and Unit of Measurement

Repair Road Signage Each

5.28.6 Testing Requirements

As per specification.

5.28.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.29 REPAIR WITH FLOWABLE CONCRETE

5.29.1 Description

Pouring/pumping of flowable concrete to fill voids.

5.29.2 Work Operations

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Pouring/pumping of flowable concrete to fill voids
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

5.29.3 Applicable Specifications

Australian Standards:

- AS 1478 – Chemical Admixtures for Concrete
- AS 1554 – Welding of Reinforcing Steel
- AS 4671 – Steel reinforcing materials
- AS 1012 – Methods of Test Concrete
- AS 1379 – The specification and supply of concrete
- AS 3600 – Concrete structures
- AS 3610 – Formwork for concrete
- MRTS03 – Drainage, Retaining Structures and Protective
- MRTS04 – General Earthwork
- MRTS05 – Unbound pavement
- MRTS14 – Road Furniture
- MRTS50 – Specific Quality System Requirements
- MRS30 - Asphalt Pavements
- MRTS70 – Concrete

5.29.4 Restoration Standard

As per specification.

5.29.5 Activity Item and Unit of Measurement

Repair with Flowable Concrete m3

5.29.6 Testing Requirements

As per specification

5.29.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.30 REPLACE CONCRETE PIPES

5.30.1 Description

Where replacement of a drainage structure is required, replacement of concrete pipe/RCBC should be to the same size/arrangement as per pre-disaster. Where replacement to pre-disaster size and arrangement is not possible due to current requirements of cover, or not economical (due to obsolete sizes or combination of pipes) a concrete pipe/RCBC arrangement with a cross-sectional area equivalent to the pre-disaster arrangement should be nominated.

5.30.2 Work Operations

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- Excavate and dispose of existing drainage structure
- Prepare base
- Form and construct base slab (where required)
- Supply and place drainage structure
- Backfill with suitable material
- Reinstate pavement.
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws.

5.30.3 Applicable Specifications

Australian Standards:

- AS 1012 – Methods of Test Concrete
- AS 1379 – The specification and supply of concrete
- AS 3600 – Concrete structures
- AS 3610 – Formwork for concrete
- MRTS03 – Drainage, Retaining Structures and Protective
- MRTS04 – General Earthwork
- MRTS05 – Unbound pavement
- MRTS14 – Road Furniture
- MRTS50 – Specific Quality System Requirements
- MRS30 – Asphalt Pavements
- MRTS70 – Concrete

5.30.4 Restoration Standard

As per specification.

5.30.5 Activity Item and Unit of Measurement

Replace Concrete Pipes m

5.30.6 Testing Requirements

As per specification.

5.30.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.31 DESILT DRAINAGE STRUCTURE - REMOVAL OF SILT AND DEBRIS

5.31.1 Description

Where a culvert has been blocked, desilt drainage structure should be selected to remove the silt and debris from the culvert where it is not possible to undertake the clearing by an excavator or small plant.

5.31.2 Work Operations

The following operations shall be included as part of the above Activity:

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- The removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- Cleaning or flushing of blocked culverts from debris or silt by hand tools, water pressure blasting or pull-back/pull-through system.
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.31.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRTS 03 Drainage, Retaining Structures and Protective Treatments
- MRTS 04 General Earthworks
- MRTS 51 Environmental Management

5.31.4 Restoration Standards

Sediment and material removed from the Culvert, Pipe or Pit, by means of excavation, flushing or otherwise. Material shall be captured and removed in accordance with MRTS51 Environmental Management.

5.31.5 Activity Item and Unit of Measurement

Clearing of culverts, pipes and pits m3

5.31.6 Testing Requirements

Visual Inspection per site

5.31.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's). Assessment photographs, sufficient to allow verification of extent of completed works, are required.

Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

5.32 REPLACE SIGN (COMPLETE) - STANDARD ROAD SIGN, INCLUDES POST

5.32.1 Description

The replacement of signs includes post to restore delineation of the road alignment.

5.32.2 Work Operations

The following operations shall be included as part of the above Activity:

- Site establishment and disestablishment of all plant, labour and materials
- Establishment and disestablishment of traffic control
- Determination of work area
- Removal of damaged road furniture
- The removal of the damaged or worn components and disposal
- The supply and installation of new components including fittings
- All other operations included in the Applicable Specifications.
- Re-instatement of roadside furniture
- Clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

5.32.3 Applicable Specification

- MRTS 02 Provision for Traffic
- MRS 11.14 Road Furniture
- MUTCD

5.32.4 Restoration Standards

The signs shall be replaced to the requirements specified for road signs in MRTS14 Road Furniture and

The Manual of Uniform Traffic Control Devices (Queensland) and as specified above.

5.32.5 Activity Item and Unit of Measurement

Replace sign (complete) - standard road sign, includes post each

5.32.6 Testing Requirements

Visual inspections to ensure the restoration standards are met.

All materials need to be approved for use by the Superintendent prior to use.

5.32.7 Completed Work Evidence

All hold point releases require GPS photographs with date, time and GPS co-ordinate stamps for evidence in addition to completed Inspection and Test Plans (ITP's.). Assessment photographs of completed works are required. Electronic copies of photographs must be received by Council in order to enable payment of Contactor claims. Such photos must be clearly named to identify the site and work undertaken to which the claim relates.

SECTION 6 – SURFACE TREATMENTS

6.1 FINISHED SURFACE

The quality and integrity of the finished wearing course surface following the completion of works is an important feature of the road. The finished surface of all sealed and unsealed wearing courses shall be completed in manner that ensures the following requirements are achieved:

- The wearing course surface of the treated area provides a smooth and safe interface with the surface of the adjacent untreated roadway.
- The Contractor shall ensure that the finished road surface is free draining with no ponding of water.
- The Contractor shall ensure that the finished pavement levels match all driveways and accesses to property.
- The Contractor shall ensure that the finished pavement levels match all intersections and side roads.
- The quality of surface finish for unsealed surfaces shall match the existing road surfacing and provide improved performance in terms of water and skid resistance.
- The type of surfacing and quality of surface finish for sealed surfaces shall match the existing road surfacing and provide improved performance in terms of water and skid resistance.
- The finished surface of pavement restoration work shall match the longitudinal grade and superelevation or crossfall of the surrounding pavement wearing course.

6.2 SEALING WORKS

The Contractor's sealing works shall be undertaken by a Queensland Transport and Main Roads prequalified contractor and is registered with the Department of Transport and Main Roads.

Wearing courses specified to be sealed with a bitumen spray seal shall be sealed, unless otherwise specified, using a double/double 14/10 seal treatment in accordance with the requirements of MRTS11 Sprayed Bituminous Treatments (Excluding Emulsion).

SECTION 7 – MATERIAL SUPPLY

7.1 MATERIAL SPECIFICATIONS

Sealed Roads

Where required in Activities 5.10 “Reconstruct Roads”; 5.13 “Replace Head/end wall – cast in-situ”;

5.15 “Patch repairs”; 5.19 “Repair of Culverts and Pipes” and 5.22 “In situ Stabilisation – Cement” the material will comply with the following specifications. Materials must comply with the standards described in MTRS 05 “Unbound Pavements” - Types 2.1; 2.2 and 2.3.

Unsealed Roads

Where required in Activity 5.3 “Formation Grading Material Supply” and 5.4a and 5.4b “Gravel Resheeting” the material will comply with the following specifications.

Materials must comply with the standards described in ARRB “Unsealed Roads Manual – Guidelines to good practice” 3rd Edition March 2009 Chapter 3.

Particle Distribution

Sieve size (mm)	% passing for all maximum sizes
55	100
37.5	95-100
26.5	90-100
19	80-100
2.36	35-65
0.425	15-50
0.075	10-40
Plasticity	Max PI 20

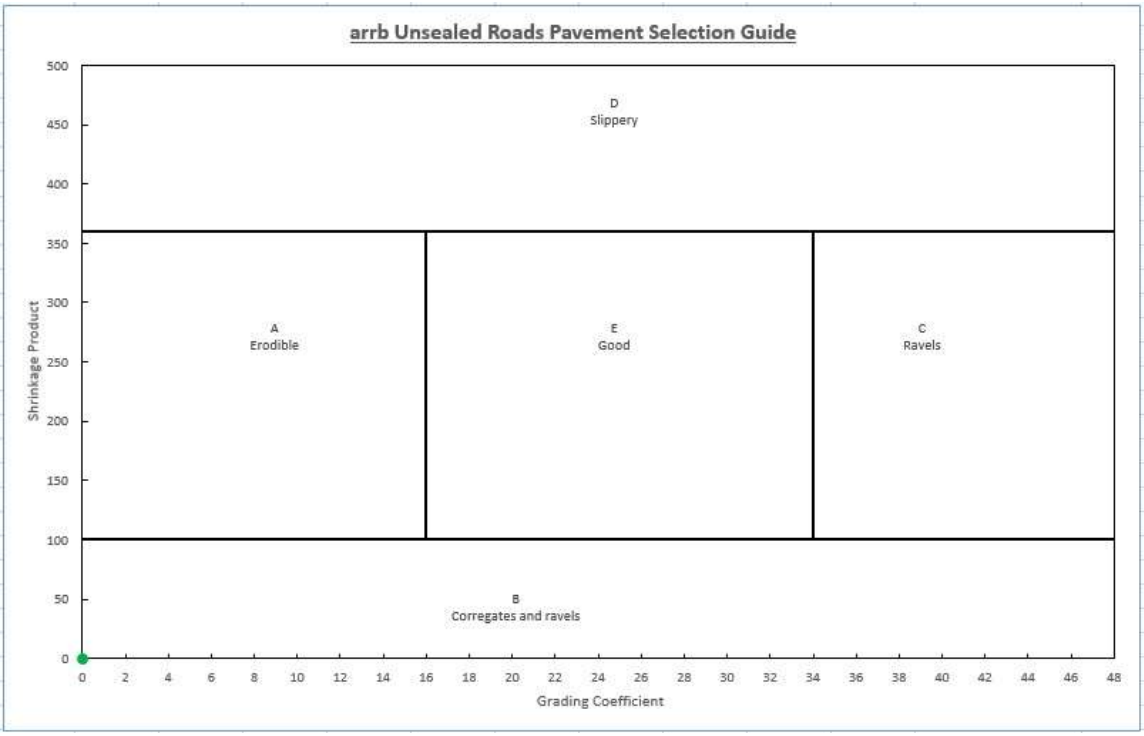
CBR ≥ 15

Linear Shrinkage 3.5% - 7.5%

The properties of the material must also be such that the material falls within “E good” in the table below where:

Shrinkage Factor (Vertical Axis): is equal to Linear Shrinkage x % passing 0.425 mm sieve (Maximum 240 Preferred)

Grading Coefficient (Horizontal Axis): is equal to (% passing 26.5 mm - % passing 2.36 mm) x % passing 4.75 mm / 100



(Council will be able to plot the proposed material on receipt of details of properties listed above)

All materials must be accepted by the Superintendent prior to commencement of cartage to site.

7.2 BULK FILL

Local Material

Where specified in the Schedule, the material is to be sourced in the vicinity of the job location and shall be of the same/similar quality to the existing. All material is subject to approval by the Inspector.

Class B (Refer MTRS 04)

Table 14.2.2 – Earth fill material properties

Earth Fill Material	WPI	PI (%)	% Passing 0.075 mm AS Sieve	Emerson Class Number
Class A1	< 1200	≥ 7	15 – 30	> 3
Class A2	< 1200	–	Note 2	
Class B	1200 ≤ WPI < 2200			
Class C	2200 ≤ WPI < 3200			
Class D	3200 ≤ WPI < 4200	Note 1		
Unsuitable	WPI ≥ 4200	–		

Notes:

1. Class D material that has PI > 50% is unsuitable fill material (refer Clause 9.2 (d)).
2. Not specified unless required in accordance with Table 14.3.1.

Selected Fill Material (Refer MTRS 04)

19.2.3 Select backfill material

Select backfill material shall be gravel or loam and shall have material properties as specified in Table 19.2.3.

Table 19.2.3 – Select backfill properties

AS Sieve Size (mm)	Percent (by Mass) Passing Sieve	
	Gravel	Loam
37.5	100	100
9.5	60 – 85	100
2.36	25 – 70	70 – 100
0.425	10 – 40	10 – 40
0.075	3 – 30	3 – 30
Other Properties Linear Shrinkage	8 maximum	6 maximum

All imported and selected fill material shall have a minimum CBR 15 soaked

7.3 MATERIAL SOURCE

All materials for Activities 5.3; 5.4; 5.10; 5.12; 5.14; 5.17 and 5.20 must only be sourced from quarries and gravel pits that are registered with DAFF and comply with all required legislation and Acts. Proof of this registration will be required prior to the material being accepted.

SECTION 8 – MEASUREMENT AND PAYMENT

8.1 GENERAL

This section covers the requirements for measurement and computation to be used in the determination of quantities of materials furnished and work performed under the Contract and provides the basis for payment.

Except for the specific items listed in this section, or unless otherwise specified, lengths and areas will be measured in the horizontal plane.

Where payment is made at rate per unit, payment will be made at the relevant tendered rate for the measured quantities of materials supplied and work performed in accordance with the requirements of the Contract.

8.2 PREPARATION AND MAINTENANCE OF MANAGEMENT SYSTEMS

No separate payment shall be made for the costs of work associated with planning, establishing, implementing and maintaining Contract Management Systems. All costs associated with planning, establishing, implementing and maintaining Contract Management Systems will be deemed to be included in the Contract Rates.

8.3 JOINT MEASUREMENT

Unless otherwise specified, a joint measure shall be undertaken to confirm final quantities of all works completed under the Contract.

The Contractor shall notify the Superintendent in sufficient time and at such appropriate time to enable a joint assessment by the Superintendent and the Contractor.

8.4 MEASUREMENT BY MASS

Where material is to be measured by mass it shall be measured in tonnes to the nearest one tenth of a tonne. The Contractor shall measure and document the mass of all materials supplied under the Contract in accordance with the Specification and the Contractor's Quality Plan. The Contractor shall supply all necessary documentation, objective where possible, of the quantity of material used.

Further, the Contractor shall provide, on request by the Superintendent, objective evidence to the ongoing verification of the accuracy of any weighing devices to assure the Superintendent of the accuracy of the measured mass of material delivered.

8.5 MEASUREMENT BY LENGTH

Where work is to be measured by length it shall be measured in meters to the nearest one tenth of a meter. The Contractor shall measure and document the length of all work completed under the Contract in accordance with the Specification and the Contractor's Quality Plan.

Further, the Contractor shall provide, on request by the Superintendent, objective evidence to the ongoing verification of the accuracy of any measuring devices to assure the Superintendent of the accuracy of the measured length of work completed.

8.6 MEASUREMENT BY AREA

Where work is to be measured by area it shall be measured in square meters to the nearest one tenth of a square meter. The Contractor shall measure and document the area of all work completed under the Contract in accordance with the Specification and the Contractor's Quality Plan.

Further, the Contractor shall provide, on request by the Superintendent, objective evidence to the ongoing verification of the accuracy of any measuring devices to assure the Superintendent of the accuracy of the measured area of work completed.

8.7 MEASUREMENT BY VOLUME

Where work is to be measured by volume it shall be measured in cubic meters to the nearest one tenth of a cubic meter. The Contractor shall measure and document the volume of all work completed under the Contract in accordance with the Specification and the Contractor's Quality Plan.

Further, the Contractor shall provide, on request by the Superintendent, objective evidence to the ongoing verification of the accuracy of any measuring devices to assure the Superintendent of the accuracy of the measured volume of work completed.

8.8 MEASUREMENT BY EACH

Where work is to be measured by each it shall be measured as a singular item or numbers of items measured as a whole number. The Contractor shall measure and document the number of items delivered or work completed under the Contract in accordance with the Specification and the Contractor's Quality Plan.

Further, the Contractor shall provide, on request by the Superintendent, objective evidence to the ongoing verification of the accuracy of any measuring devices to assure the Superintendent of the accuracy of the measured items delivered or included in the works.

8.9 PAYMENT REDUCTION

Work which fails to fully satisfy the specified standards but is acceptable on reduced payment, will be valued in accordance with the percentage reduction stated in the relevant clause or table. The reduced payment will be based on rates submitted in the Schedules or where no rate or reference table is provided, on the value or rate for the work as agreed between the Superintendent and the Contractor. Where no agreement can be reached the work will be valued by the Superintendent.

8.10 MEASUREMENT AND PAYMENT OF SCHEDULE OF RATES ITEMS – SCHEDULE K1

Measurement for Schedule of Rates Items in Schedule K1 – Contract Works Pricing Schedule, will be made using the units denoted in the schedule of rates table against the applicable item.

Payment for Schedule of Rates Items in Schedule K1 – Contract Works Pricing Schedule, will be made using the tendered rate in the schedule of rates table. Tendered rates shall include full compensation for the supply of all labour, materials, plant, overheads, profit and any other costs incurred in completing the specified work covered by the item.

8.11 MEASUREMENT AND PAYMENT OF PLANT AND PERSONNEL – SCHEDULE K2

From time to time additional works to those specified in Schedule K1 may be instructed by the Superintendent. Where relevant rates are listed in Schedule K2 Additional Works Pricing Schedule, these shall be used as the basis of payment. Where no such rate exists the value of works shall be determined in accordance with Clause 36 Variations of the General Conditions of Contract.

Payment for items in Schedule K2 – Additional Works Pricing Schedule, will be made using the tendered rate in the schedule of rates table. Tendered rates for plant, equipment and personnel shall include full compensation for the supply of the plant, equipment and personnel and include appropriate allowances for labour, overheads, profit and any other costs incurred in supplying the item.

No payments will be made for standby of plant, equipment and personnel.

8.12 PAYMENTS TO CONTRACTOR

All payments due to the Contractor for works, supplies or services provided under this Contract will be made by Electronic Funds Transfer (EFT).

Within 14 days of award of the Contract, the Contractor shall submit the following details to the Superintendent:

name and address of a financial institution participating in the Direct Entry System to which payment is to be made;

- relevant Bank State Branch code or participating financial institution number (BSB);
- account name; and
- account number.

The Contractor shall within seven days of any change to the above details inform the Superintendent in writing of that change. Etheridge Shire Council shall not be responsible for any delay in transmission of funds arising from incorrect or out-of-date information supplied by the Contractor.

Payments to the Contractor shall be deemed to have been made by Etheridge Shire Council within 24 hours from the date Etheridge Shire Council has:

(a) correctly entered all necessary information; and
(b) sent; and
(c) had processed under a processing date;

all relevant debits online into the Electronic Funds Transfer System.

Etheridge Shire Council shall not be responsible for any delays or failures in transmission of funds arising from or relating to system failure, temporary system constraints or other functional transfer problems in the EFT direct entry system.

STANDARD SECTIONS

MAIN ROADS TECHNICAL SPECIFICATION

Notwithstanding the requirements of Clause 2.1 Service Level, Scope and Quality the Contract works shall be subject to the following Main Roads Technical Specifications (MRTS). In delivering the Contract Works the Contractor shall ensure the requirements of the relevant specification are adhered to.

The table below details the MRTS documents relevant to this Contract.

Reference Number	Specification Name
MRTS05	Unbound Pavements
MRTS07B	Insitu Stabilised Pavements Using Cement or Cementitious Blends
MRTS11	Sprayed Bituminous Treatments (Excluding Emulsion)
MRTS17	Bitumen and Multigrade Bitumen
MRTS22	Supply of Cover Aggregate
MRTS04	General Earthworks
MRTS14	Road Furniture

APPENDIX A – SITE LOCATION MAPS

Zone 1

Zone 2

Zone 3

Zone 4

Zone 5

Mareeba Shire

Tablelands Regional

Etheridge Shire

Croydon Shire

Carpentaria Shire

McKinlay Shire

Richmond Shire

Flinders Shire

Charters Towers Regional

Georgetown

Mount Surprise

Einasleigh

Forsayth

Kidston

Gulf Dev Road

Kennedy Highway

Kennedy Dev Road

Gregory Developmental Road

Legend

- Camp location
- Water Source
- TMR Road
- Carpentaria Downs Road
- Conjuboy Road
- Dulthara Road
- Lochlea Road
- Maitland Downs Road
- Mywin Road
- Oak Valley Station Road
- Rosella Plains Road
- Spring Creek Road
- The Lynd Road
- Watch Hill Road
- Welcome Downs Road
- Flood Zone

Etheridge Shire Council
Flood Zone 5 Overview

Date: 15/10/2024

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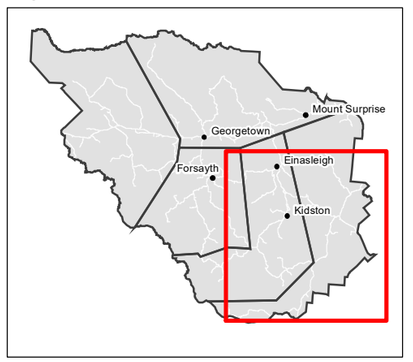
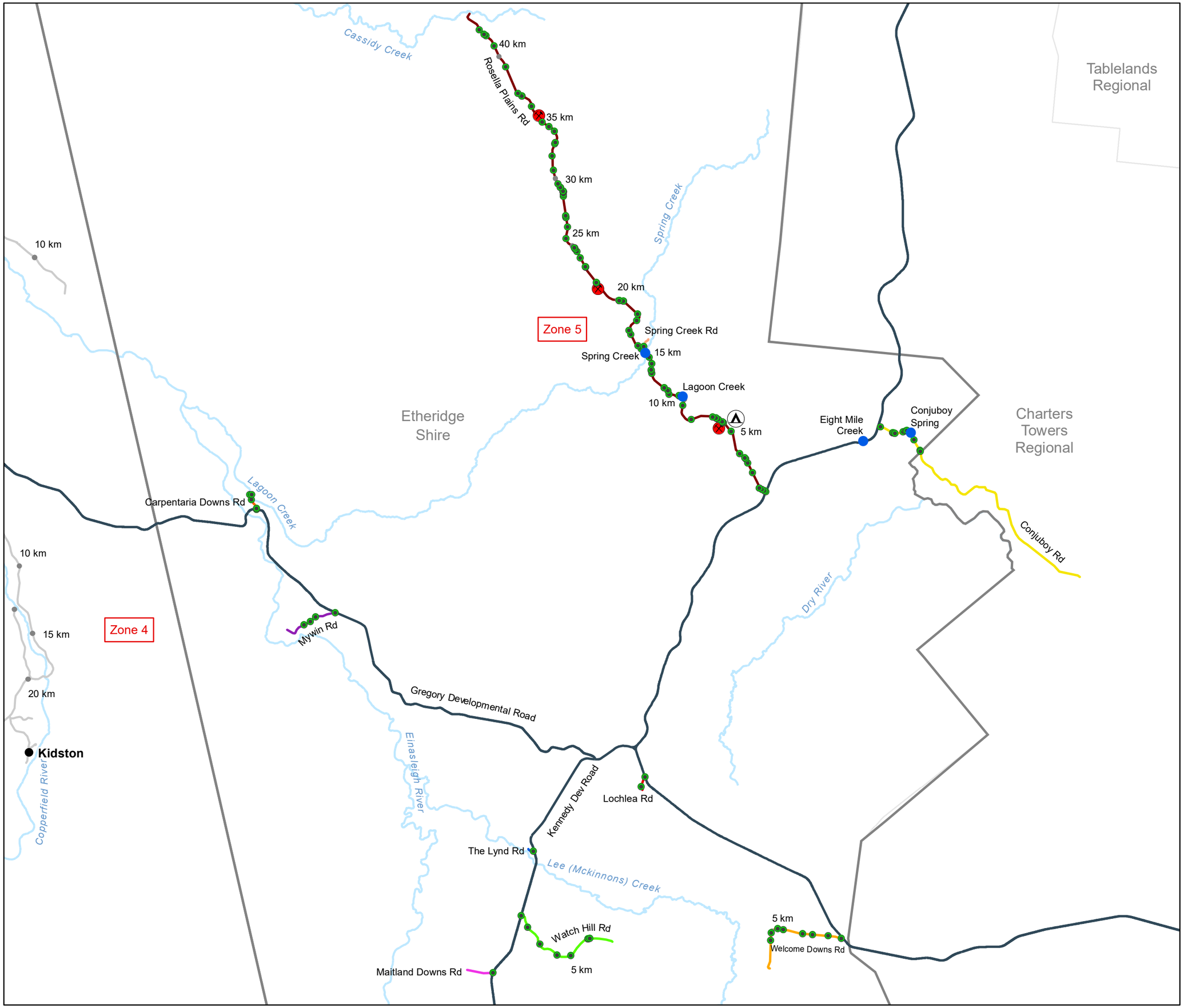
Kilometers

Map Location





Legend

- Camp location
- Gravel Pit
- Treatment Location
- Water Source
- TMR Road
- Carpentaria Downs Road
- Conjuboy Road
- Lochlea Road
- Maitland Downs Road
- Mywin Road
- Rosella Plains Road
- Spring Creek Road
- The Lynd Road
- Watch Hill Road
- Welcome Downs Road
- Flood Zone

Etheridge Shire Council
Flood Zone 5 North

Date: 15/10/2024
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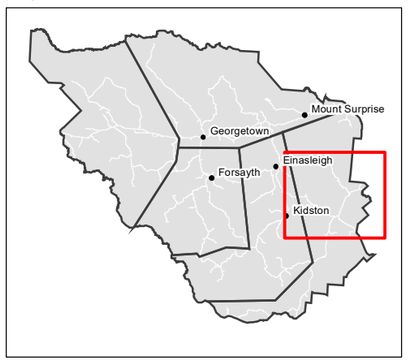
Kilometers

Map Location



65 km
55 km
50 km
45 km
40 km
35 km
30 km
25 km
20 km
15 km
10 km
5 km
10 km
5 km
20 km
25 km
5 km
30 km
5 km
10 km
Copperfield River
Cranky Creek
Branch Creek
Gilbert River
Einasleigh River
Zone 4
Etheridge Shire
Zone 5
Kennedy Dev Road
Einasleigh River
Oak Valley Station Rd
Simpson Creek
Simpsons Creek
Blackbraes Bore
Charters Towers Regional
75 km
70 km
Dulthara Rd
65 km
60 km
55 km
50 km
45 km
40 km
35 km
30 km
25 km
20 km
Cheviot Hills dam
15 km
10 km
5 km
Flinders Shire

Legend

- Camp location
- Gravel Pit
- Treatment Location
- Water Source
- TMR Road
- Dulthara Road
- Oak Valley Station Road
- Flood Zone

Etheridge Shire Council
Flood Zone 5 South

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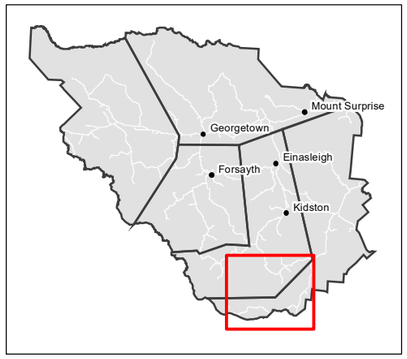
Kilometers

Map Location



APPENDIX B – QRA TREATMENT GUIDE

QRA QUEENSLAND RECONSTRUCTION AUTHORITY

Treatment Guide 2020–21

July 2021

Queensland Government

Document details

Security classification	Public
Date of review of security classification	June 2021
Authority	Queensland Reconstruction Authority
Document status	Final
Version	2.0
Reference number	DOC/21/22621

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Email: info@qra.qld.gov.au

Contents

Foreword

Prepared by the Queensland Reconstruction Authority (QRA), this *QRA Treatment Guide* provides a common set of treatments for the scoping of road reconstruction works following damage by natural disasters.

The treatment list represents the most commonly used treatments across the state. Detail of each treatment is provided to enable consistency of language and a common understanding of treatment inclusions/exclusions. A consistent treatment set also provides for consistency in the methodology for benchmarking local rates.

The guide will be reviewed from time to time to ensure emerging or common treatments are documented.

Treatment list

Category	Reference	Treatment	Unit
Unsealed pavements	USP_LFG	Light formation grading	m
	USP_MFG	Medium formation grading	m
	USP_HFG	Heavy formation grading	m
	USP_HFG50	Heavy formation grading incorporating 50mm of imported material	m^3
	USP_HFG75	Heavy formation grading incorporating 75mm of imported material	m^3
	USP_GR	Gravel resheeting (excludes supply of material)	m^3
	USP_GR100	Gravel resheeting 100mm	m^3
	USP_GR150	Gravel resheeting 150mm	m^3
	USP_GMS	Gravel/material supply	m^3
	USP_RSTD	Reshape table drain (1 side)	m
Sealed pavement repairs	SPR_STB	In-situ stabilisation - including 50mm corrector. Excludes seal	m^2
	SPR_GO	Granular overlay - overlay with imported material (≤150mm). Excludes seal	m^2
	SPR_FBS	Foamed bitumen stabilisation - including 50mm corrector. Excludes seal	m^2
	SPR_RR	Reconstruct unbound granular pavement. Excludes seal	m^2
	SPR_RB	Reconstruct unbound granular base Excludes seal	m^2
	SPR_PRL	Pavement repair - patch unbound pavement failure (≤20m2). Includes 2 coat bitumen seal	m^2
	SPR_POT	Pothole repair ≤1m2	each
	SPR_SCR	Crack repair	m
	SPR_PER	Edge repair	m
	SPR_USF	Reconstruct unsealed shoulder - repair isolated shoulder failure	m^2
	SPR_HSG	Heavy shoulder grading - incorporating 50mm of imported material	m
	SPR_RSAC	Asphalt surfacing, ≤50mm thickness	m^2
	SPR_RSSR	Bitumen spray seal, 2-coat	m^2
Clearing and earthworks	EXC_HVC	Clear mixed debris and remove from site	m^3
	EXC_RSOS	Bulk excavate surplus material and remove from site	m^3
	EXC_RSS	Bulk excavate surplus material to spoil	m^3
	BKF_IMP	Bulk fill - imported	m^3
	BKF_LOC	Bulk fill - local	m^3
Concrete works	CON_KER	Reconstruct concrete kerb	m
	CON_RCN	Reconstruct reinforced concrete	m^3
	CON_RFC	Repair with flowable concrete	m^3

Treatment list (cont)

Category	Reference	Treatment	Unit
Drainage structures	CUL_RP	Repair drainage structure - excavate, repair and reinstate	m
	CUL_SIL	Desilt drainage structure - removal of silt and debris	m^3
	CUL_RBC<600	Replace RCBC, nominal span ≤600mm.	m
	CUL_RBC<900	Replace RCBC, nominal span ≤900mm.	m
	CUL_RBC<1200	Replace RCBC, nominal span ≤1200mm.	m
	CUL_RBC>1200	Replace RCBC, nominal span >1200mm.	m
	CUL_RCP<375	Replace concrete pipe ≤375mm dia.	m
	CUL_RCP<600	Replace concrete pipe ≤600mm dia.	m
	CUL_RCP<900	Replace concrete pipe ≤900mm dia.	m
	CUL_RCP<1200	Replace concrete pipe ≤1200mm dia.	m
	CUL_RCP>1200	Replace concrete pipe >1200mm dia.	m
	CUL_RHW<375	Replace head/end wall ≤375mm pipe or RCBC	unit
	CUL_RHW<600	Replace head/end wall ≤600mm pipe or RCBC	unit
	CUL_RHW<900	Replace head/end wall ≤900mm pipe or RCBC	unit
	CUL_RHW<1200	Replace head/end wall ≤1200mm pipe or RCBC	unit
	CUL_RHW>1200	Replace head/end wall >1200mm pipe or RCBC	unit
Protection works	RK_RKP	Rock protection	m^3
	RK_STP	Repair stone pitching	m^2
	RK_MAT	Construct rock mattress	m^3
Road furniture and delineation	RFD_RGET	Replace guardrail end treatment	each
	RFD_RG	Replace guardrail	m
	RFD_RP	Replace guide posts or markers	each
	RFD_RRS	Repair road signage	each
	RFD_RSF	Replace sign face only - standard road sign	each
	RFD_RCS	Replace sign (complete) - standard road sign, includes post	each
	RFD_RLN	Reinstate line marking	m
Other	OTHER	Other - including structures, retaining items	lump sum

Unsealed roads overview

Treatment selection for the restoration of unsealed roads should be commensurate with the classification of the asset and its maintained condition prior to the disaster. Unsealed road assets are generally classified as either unformed, formed or gravelled.

Unformed road

An unformed road is a road that has no constructed or maintained formation, or surface drainage.

Figure 1 - Unformed road

Unformed roads may have had vegetation intentionally cleared, or may simply be the result of vehicles travelling the same path over a period of time.

Unless the asset owner is able to demonstrate an appropriate level of maintenance has occurred (bulk-fill or clearing), works to unformed assets are generally ineligible. The treatments applicable to a maintained unformed road are bulk fill of scours using local material (BKF_LOC), clearing of mixed debris (EXC_HVC) and bulk excavation to spoil (EXC_RSS).

Formed road

A formed road is a road that has a constructed formation and, in most cases, table drains. A formed road is often constructed through grading of materials from the road reserve onto the road, resulting in the creation of table drains and a shaped formation.

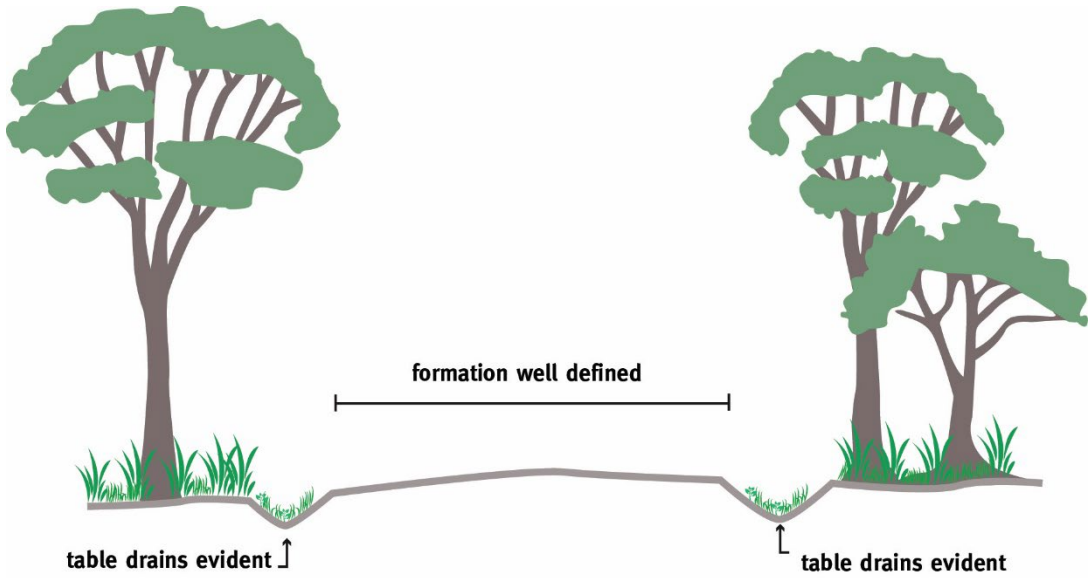

Figure 2 - Formed road

As no gravel is generally imported for this road classification, the import of gravel is generally not eligible. Where scouring or loss of material has occurred, bulk fill using local material (BKF_LOC) from within the road corridor should be used.

Where sufficient material remains on the road, but loss of shape has occurred, the treatment should be limited to a **Medium formation grading (USP_MFG)**.

Where rutting and loss of shape is extensive, **Heavy formation grading (USP_HFG)** may be considered. The displaced formation material should be recovered from the table drains or within the road corridor.

Gravel road

A gravel road is a road that has had a layer of gravel imported, compacted and maintained atop the formation. Gravel may vary from a material won from borrow pits, nearby ridges or quarries.

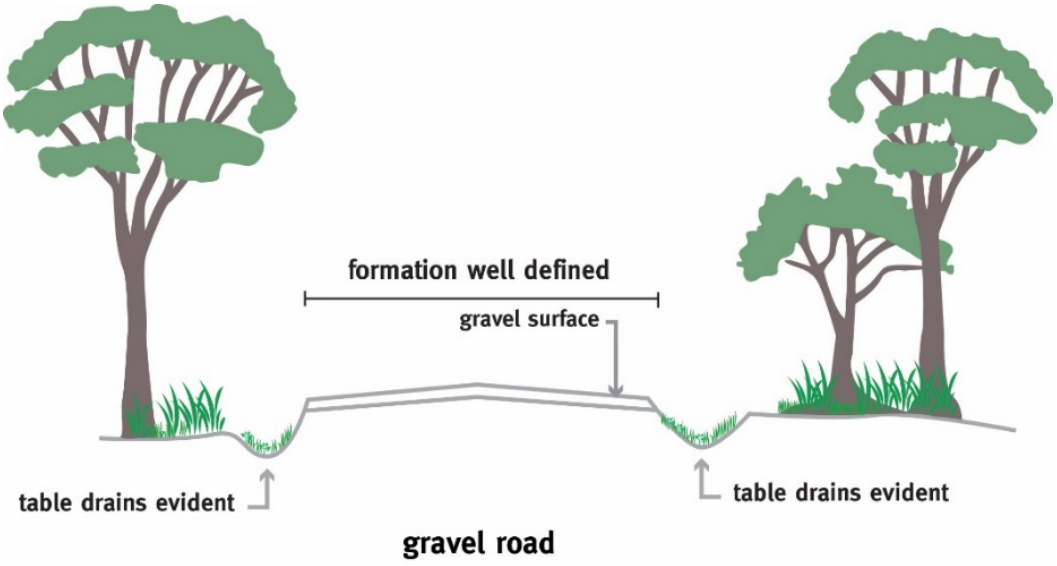

Figure 3 – Gravel road

Where rutting, loss of shape and gravel displacement has resulted, a **Medium formation grading (USP_MFG)** should be nominated. Where displaced gravel is suitable and recoverable from drainage lines, it should be used as a component of the Medium formation grading.

Where the displaced gravel is non-recoverable/heavily contaminated and extensive damage to the roadway has resulted, import of material will likely be required. Considerations of the use of Heavy Formation Grade and Gravel resheet treatments is provided below:

- Where gravel remains on the roadway (i.e. ≥25mm thickness), but gravel displacement and loss of shape is evident, a **Heavy formation grading (USP_HFG)** + **Gravel/material supply (USP_GMS)** should be nominated. The gravel supply volume should be commensurate with the volume of material lost as a result of the event. A minimum gravel thickness of 75mm (inclusive of gravel remaining on roadway) is generally required for constructability purposes
  - to achieve this, where ≥25mm thickness remains on the roadway, a **Heavy formation grading incorporating 50mm of imported material (USP_HFG50)** should be nominated
  - where loss of gravel as a result of the event exceeded 50mm, a Heavy formation grading incorporating 75mm of imported material **(USP_HFG75)** may be nominated
  - where loss of gravel as a result of the event exceeded 75mm, a Gravel Re-sheet should be nominated
- Where loss of both shape and gravel is evident, and no useable gravel remains on the roadway (i.e. <25mm depth), a **100mm Gravel resheet (USP_GR100)** should be nominated. A **150mm Gravel resheet (USP_GR150)** may be nominated only where supported by asset registers and maintenance records. Imported material should be consistent with material in-place pre-disaster or material currently utilised by the asset owner in maintaining the asset.
- Where loss of shape has occurred, but no loss of gravel is evident as a result of the event, a **Heavy formation grading (USP_HFG)** should be nominated. As gravel loss is not evident, Gravel/material supply is not eligible.
- Where road subgrade is exposed, loss of shape is general only (wear and tear), and no loss of gravel is evident as a result of the event, works would be considered ineligible.

Unsealed road treatments

All grading and resheet treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- clean up of site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Reference	Treatment	Unit
USP_LFG	Light formation grading	m
USP_MFG	Medium formation grading	m
USP_HFG	Heavy formation grading	m
USP_HFG50	Heavy formation grading incorporating 50mm of imported material	m^3
USP_HFG75	Heavy formation grading incorporating 75mm of imported material	m^3
USP_GR	Gravel resheeting (excludes supply of material)	m^3
USP_GR100	Gravel resheeting 100mm	m^3
USP_GR150	Gravel resheeting 150mm	m^3
USP_GMS	Gravel/material supply	m^3
USP_RSTD	Reshape table drain (1 side)	m

Light formation grading

For gravel roads damage as a result of an activated event, a **Light formation grading** is often undertaken during the emergency works period to restore rideability prior to restoration works. Where the road is formed only (not gravelled), and loss of shape and material is minor only, a **Light formation grading** may be appropriate for restoration works to restore shape.

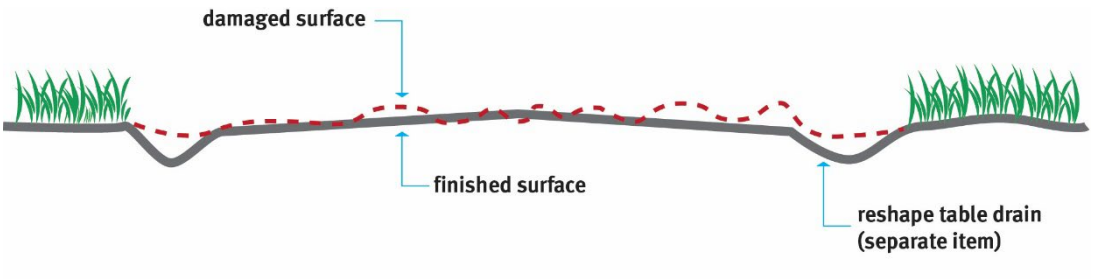

Figure 4 – Light formation grading

Treatment:	**USP_LFG**
Unit of measurement:	m
Summary:	Light trimming by grader of unsealed road surface to restore rideability
Description:	Light trimming by grader of the existing roadway to fill holes and other depressions.
Exclusions:	Scarifying, compaction, import of water or material, table drain works (separate item)
Indicative plant:	Grader

Medium formation grading

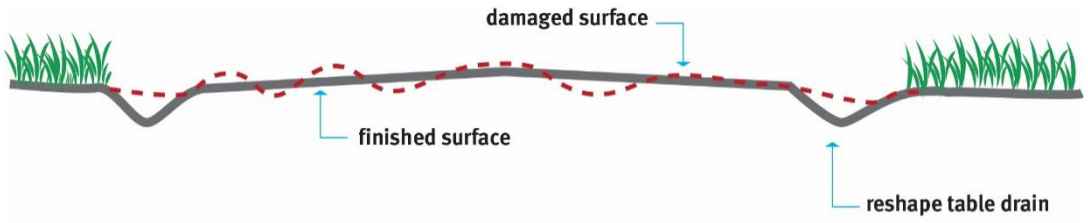

Figure 5 – Medium formation grading

Treatment:	**USP_MFG**
Unit of measurement:	m
Summary:	Grading of unsealed roadway to reinstate the pre-disaster profile.
Description:	Grading to restore the road surface to pre-disaster profile and condition. Includes roughening of up to 50mm of roadway top (by grader), clearing and grubbing to remove light vegetation and grass, recovery of suitable material from table drains (by grader), incorporation of water and compaction.
Exclusions:	No import of material
Indicative plant:	Grader, water truck, rollers

Heavy formation grading

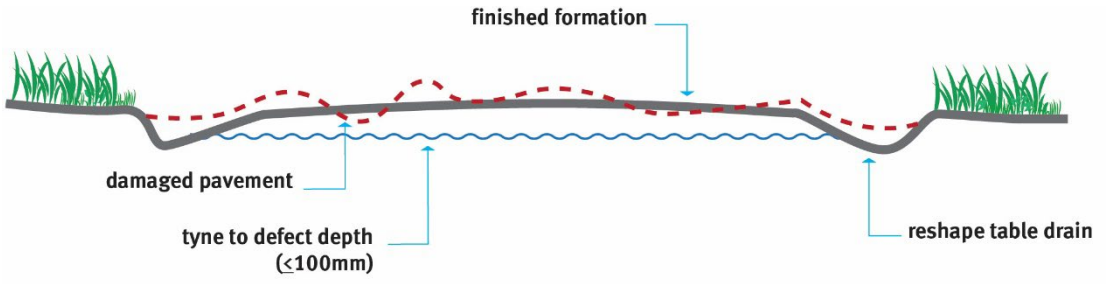

Figure 6 – Heavy formation grading

Treatment:	**USP_HFG** **USP_HFG50** **USP_HFG75**
Unit of measurement:	m
Summary:	Reinstatement of formation and profile.
Description:	Clearing and grubbing and recovery of suitable material from table drains (by grader), tyne ≤100mm depth (150mm if supported by depth of rutting), incorporation of additional gravel/material (excluding USP_HFG), trimming, and compaction.
Exclusions:	USP_HFG (only) – No gravel/material supply
Indicative plant:	Grader, water truck, roller, front end loader and truck (for disposal of unsuitable)

Gravel/material supply

Treatment:	**USP_GMS**
Unit of measurement:	m^3
Summary:	Supply of gravel/material to the work site.
Description:	Supply of gravel/material to the work site for inclusion with material reclaimed through grading operations. Top up gravel/material only. Imported gravel/material should be consistent with material in-place pre-disaster or material which the asset owner currently uses for maintenance in the area.
Exclusions:	Excludes all operations for placement, trimming and rolling
Indicative plant:	Gravel truck, front end loader/excavator

Gravel resheeting

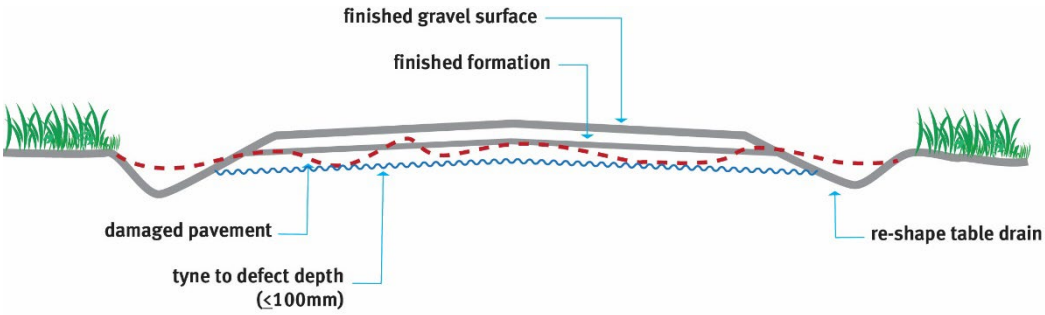

Figure 7 – Gravel resheeting

Treatment:	**USP_GR** **USP_GR100** **USP_GR150**
Unit of measurement:	m^3
Summary:	Addition of imported gravel/material to the roadway to reinstate the running surface and correct profile.
Description:	Preparation of the formation through Heavy Formation Grading. Supply and spreading of imported gravel/material. Imported material should be consistent with material in-place pre-disaster or material which the asset owner currently uses for maintenance in the area.
Exclusions:	Additional material required for incorporation in **the Heavy Formation Grading** (prior to resheet) is not included. Any additional volume should be included as **Gravel/material supply or Bulk Fill** **USP_GR** (only) relates to the work operations of resheeting and excludes import of gravel/material. **USP_GR** should be used in conjunction with **USP_GMS** (Gravel/material supply) where works are being undertaken by Council day labour (**USP_GR** item estimate based on benchmark rate) and a commercial supply for material is required (**USP_GMS** rate based on market pricing)
Indicative plant:	Grader, truck, water truck, roller, front end loader and truck (for disposal of unsuitable)

Reshape table drain

Consequential re-shaping of existing table drains/vee drains, through recovery of displaced material, will occur when carrying out **Medium Formation Grade, Heavy Formation Grading** or **Gravel Resheet** operations. In these instances, no separate item is required for the inclusion of re-shaping existing table drains.

In the absence of, or where not included in the adjacent pavement work item, a separate treatment item, and evidence of event related damage demonstrating silting, scour or blockage of the table drains is required for inclusion.

Treatment:	**USP_RSTD**
Unit of measurement:	m
Summary:	Cleaning and reshaping of existing surface drains adjacent the road formation (allowance for one drain only)
Description:	Reshaping of existing table drains by grader.
Exclusions:	No scarify, no import of material, no addition of water, no compaction
Indicative plant:	Grader, front end loader and job truck (for disposal of unsuitable)

Where minor scours or minor deposits of silt exist along a drainage line, repair should be achieved through reshaping of the table drain.

Where drainage lines are filled with large deposits of silt, **Bulk Excavate** (**EXC_RSOS** or **EXC_RSS**) should be nominated to allow for removal of the material.

Where major scours exist along a drainage line, **Bulk Fill** (**BKF_IMP** or **BKF_LOC**) should be nominated to allow for filling of the scours.

Sealed pavement repairs

All sealed pavement repair treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Treatment selection for the restoration of sealed pavements should be appropriate to the road type, functionality, pre-disaster condition and Value for Money outcomes with reference to site specific constraints.

Reference	Treatment	Unit
SPR_STB	In-situ stabilisation - including 50mm corrector. Excludes seal	m^2
SPR_GO	Granular overlay - overlay with imported material (≤150mm). Excludes seal	m^2
SPR_FBS	Foamed bitumen stabilisation - including 50mm corrector. Excludes seal	m^2
SPR_RR	Reconstruct unbound granular pavement. Excludes seal	m^2
SPR_RB	Reconstruct unbound granular base Excludes seal	m^2
SPR_PRL	Pavement repair - patch unbound pavement failure (≤20m2). Includes 2 coat bitumen seal	m^2
SPR_POT	Pothole repair ≤1m2	each
SPR_PER	Edge repair	m
SPR_SCR	Crack repair	m
SPR_USF	Reconstruct unsealed shoulder - repair isolated shoulder failure	m^2
SPR_HSG	Heavy shoulder grading - incorporating 50mm of imported material	m
SPR_RSAC	Asphalt surfacing, ≤50mm thickness	m^2
SPR_RSSR	Bitumen spray seal, 2-coat	m^2

Localised damage

Pothole repair

Where a small pavement failure in the form of a pothole emerges (generally under a wheel path), a **Pothole repair** may be considered appropriate.

Treatment:	**SPR_POT**
Unit of measurement:	each
Summary:	Repair of localised damage with asphalt or premix
Description:	Removal of water and debris, cut back to sound pavement and squaring of sides. Fill with asphalt-mix and compact to match adjacent road surface.
Exclusions:	Line-marking
Indicative plant:	Work truck, pneumatic hammer, cutting saw, blower, plate compacter

Where multiple potholes appear in close proximity, a **Pavement Repair** may be better suited.

Pavement repair

Where a road is damaged in isolated areas, a **Pavement Repair** is considered the most appropriate treatment.

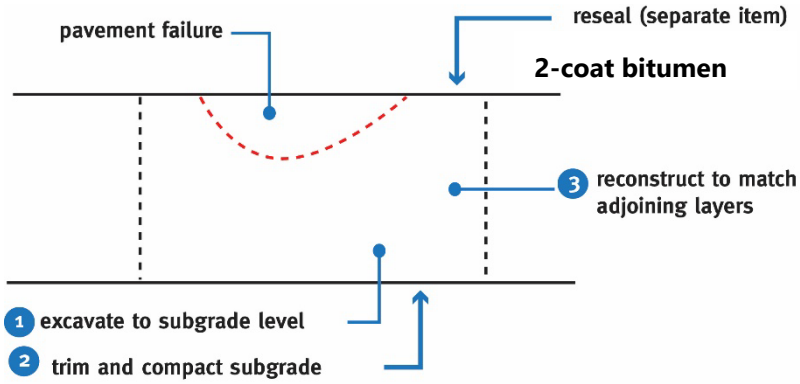

Figure 8 – Pavement repair

Treatment:	**SPR_PRL**
Unit of measurement:	m^2
Summary:	Removal and reconstruction of isolated pavement failures
Description:	Removal of failed pavement material, reasonable allowance for replacement of unsuitable, compaction of subgrade, import and placement of unbound granular material in layers to match adjoining. 2-coat bitumen seal.
Exclusions:	nil
Indicative plant:	Excavator, truck, grader, water truck, rollers

Edge repair

Where damage to the edge of seal and/or pavement has occurred due to trafficking in saturated conditions or excessive volumes or velocities of water, **Edge repair** (**SPR_PER**) should be nominated.

Treatment:	**SPR_PER**
Unit of measurement:	m
Summary:	Repair of pavement edge failures
Description:	Supply and application of tack coat; and supply, application and compaction of asphalt or premix.
Exclusions:	linemarking
Indicative plant:	Roller or manual compaction, truck, flowcon (where required)

Crack repair

Where damage to the road seal has developed as a result of shrink/swell of the underlying material during saturation/inundation, **Crack repair** (**SPR_SCR**) should be nominated.

Treatment:	**SPR_SCR**
Unit of measurement:	m
Summary:	Repair of pavement seal cracking
Description:	Clean out (blow) of loose material, partial filling, application of crack seal to manufacturers specifications, application of cover material.
Exclusions:	linemarking
Indicative plant:	Hand tools and minor compaction equipment

Continuous damage

Where continual or long lengths of damage has occurred across the width of the road, a full-width treatment is likely to be required. Selection of an appropriate full-width treatment requires consideration of the pavement failure mechanism, the usefulness of the in-situ pavement, the surrounding environment and any constructability issues (e.g. plant or material availability).

Where limited damage to the underlying subgrade has occurred, but loss of shape is extensive, excavation of existing pavement material may pose significant risk. Risks include subgrade disturbance and subsequent need for treatment or replacement, or interference with drainage or utilities. In such circumstances, **in-situ stabilisation (SLP_STB)** or reworking of the existing pavement (tyne, shape and compact – select **USP_HFG**) may be suitable. Where additional pavement strength is required, and where still able to represent a value for money option compared to the use of pavement reconstruction, a **Granular Overlay (SPR_GO)** may also be considered.

In-situ stabilisation

Where limited damage to the underlying subgrade has occurred, but loss of shape is extensive, **In-situ stabilisation** may be appropriate**. In-situ Stabilisation** using cement, fly ash or hydrated lime or **Foamed bitumen stabilisation** allow repair of damaged pavement without exposing the subgrade.

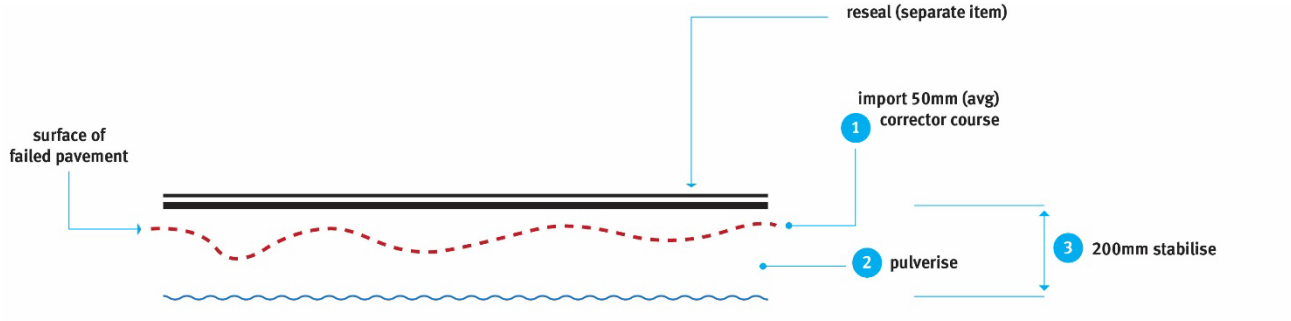

Figure 9 – In-situ stabilisation

Treatment:	**SPR_STB** (in-situ stabilisation), **SPR_FBS** (Foamed bitumen stabilisation)
Unit of measurement:	m^2
Summary:	In-situ stabilisation of base course material
Description:	Removal of material not suitable for stabilisation, import and spreading of unbound granular material to replace unsuitable and for shape-correction (50mm), pulverisation, supply and spreading of stabilising agents, stabilisation, compaction and curing
Exclusions:	Excludes all seal items
Indicative plant:	Gravel truck, grader, stabiliser, water truck and roller, cement spreader/ prime spreader (for prime or foam bitumen stabilisation)

The selection of an appropriate stabilisation type requires consideration of plant availability, suitability of work force, environmental conditions and constitution of the existing pavement.

In some cases, the condition and composition of the existing pavement may preclude in-situ stabilisation treatments. The availability of plant, size of the site and future performance of the stabilised pavement in the context of the surrounding pavement should also be considered when selecting insitu-stabilisation and the stabilisation type.

Granular overlay

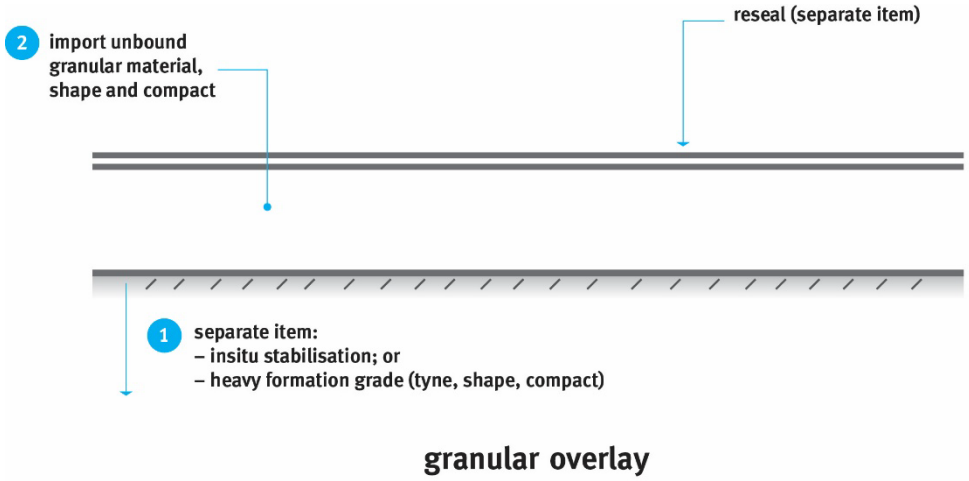

Figure 10 – Granular overlay

Treatment:	**SPR_GO**
Unit of measurement:	m^2
Summary:	Overlay of treated pavement with unbound granular material
Description:	Import and spreading unbound granular material, shaping and compaction, ≤150mm thickness
Exclusions:	Excludes treatment of in-situ material/preparation of subbase (refer alternative treatments)
	Excludes formation work in accommodation of extra pavement height
	Excludes all seal items
Indicative plant:	Gravel truck, grader, water truck, roller

The use of an overlay can reduce material spoilage, reduce risks of exposing unsuitable subgrade and reduce the duration of construction. However, the use of a granular overlay may not be appropriate in the event of vertical constraints (e.g. afflux/flow issues, short site, tie-in to structures, kerb and channel or property accesses) or horizontal constraints, for example insufficient formation width to accommodate overlay. In these circumstances, a treatment maintaining existing levels may need to be adopted.

The overall cost of the pavement treatment, including the treatment of the in-situ material, and formation works to accommodate the overlay, as well as the granular overlay itself needs to be considered in comparison to the likely cost of the alternative, Reconstruct Road treatment.

Reconstruct unbound granular pavement

Where extensive subgrade failure or material contamination has occurred, and the use of an overlay or stabilised layer cannot economically or suitably bridge the failure, reconstruction of the road will likely be required.

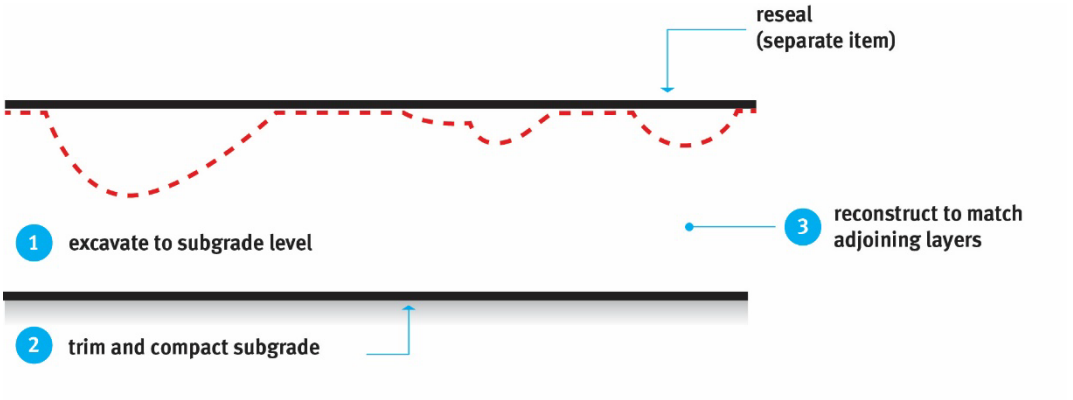

Figure 11 – Reconstruct unbound granular pavement. Excludes seal

Treatment:	**SPR_RR**
Unit of measurement:	m^2
Summary:	Removal and reconstruction of failed pavement
Description:	Removal of failed pavement material, reasonable allowance for replacement of unsuitable, compaction of subgrade, import and placement of unbound granular material in layers to match adjoining
Exclusions:	Excludes all seal items (separate item)
Indicative plant:	Excavator, truck, grader, water truck, roller

Reconstruct unbound granular base

Where road pavement damage such as peeling/stripping of seal (due to overland flow) or shallow pavement failures (i.e. above subgrade) have occurred, **Reconstruct unbound granular base** should be nominated. This treatment allows for repair/replacement of the top 150mm of unbound pavement ready for sealing.

Treatment:	**SPR_RB**
Unit of measurement:	m^2
Summary:	Reconstruction of isolated base course pavement failures
Description:	Removal of failed pavement material (where material cannot be reused), compaction of underlying pavement layer, import and placement of unbound granular base pavement to match adjoining
Exclusions:	Excludes all seal items
Indicative plant:	Excavator/profiler, truck, grader/skid-steer, water truck, roller

Shoulders

Shoulder scour

Where damage to the verge/shoulder (clear of the table drain) has occurred, and no damage sustained to the sealed roadway, a shoulder restoration treatment will likely be appropriate.

Where a pavement failure has occurred and the damage is localised, **Reconstruct unsealed shoulder** should be nominated. Where loss of shoulder material or scour has occurred due to overland or longitudinal flow, a **Heavy shoulder grading** should be nominated.

Reconstruct unsealed shoulder

For treatment of localised areas of severely damaged or contaminated shoulders or verges, **Reconstruct Unsealed Shoulder** should be used. This item is quantified in m² and should be used for localised repairs only.

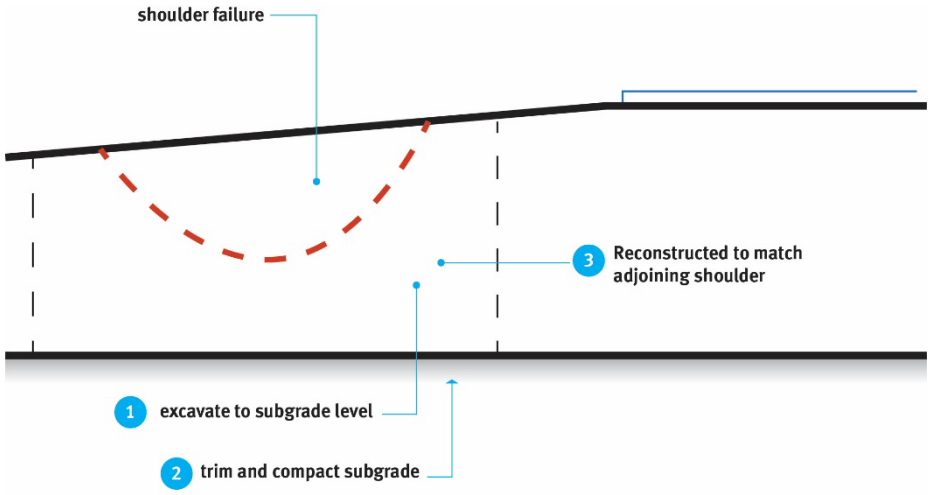

Figure 12 – Reconstruct unsealed shoulder

Treatment:	**SPR_USF**
Unit of measurement:	m²
Summary:	Placement and compaction of gravel into isolated potholes in a gravel shoulder or verge
Description:	Removal of failed material, reasonable allowance for replacement of unsuitable, compaction of subgrade, supply, placement and compaction of granular material
Exclusions:	No reshaping of table drains – refer USP_RSTD Brooming of adjacent seal only, no works to sealed pavement
Indicative plant:	Excavator, water truck, roller, truck, grader

Heavy shoulder grading

Where loss of shoulder material or scour has occurred due to overland or longitudinal flow, a **Heavy shoulder grading** should be carried out.

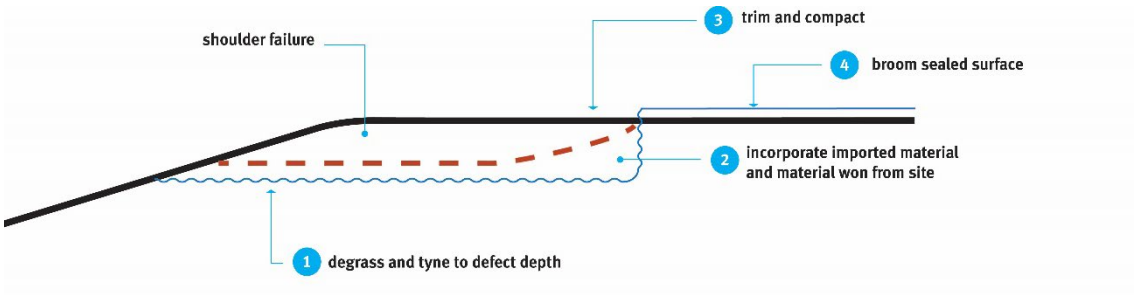

Figure 13 – Heavy shoulder grading

Treatment:	**SPR_HSG**
Unit of measurement:	m
Summary:	Grading of unsealed shoulder to reinstate correct profile
Description:	Reinstatement of formation and profile Includes recovery of material from adjacent table drains where appropriate (by grader), incorporation of additional 50mm top up material, tyne ≤100mm depth, trimming and rolling, and brooming of adjacent sealed surface. Where material additional to the included 50mm is required, include Gravel/material supply
Exclusions:	No works to sealed pavement
Indicative plant:	Grader, water truck, roller

Pavement seals

Where a road reconstruction, granular overlay or stabilisation has occurred as part of the restoration works, a seal will need to be applied. An asphalt surface or bitumen spray seal (2-coat) should be nominated consistent with the pre-disaster road surface.

Asphalt surfacing, ≤50mm thickness

Treatment:	**SPR_RSAC**
Unit of measurement:	m^2
Summary:	Asphalt surfacing ≤50mm
Description:	Preparation of the existing surface, supply and application of tack coat, supply, laying and compaction of asphalt, line spotting as required
Exclusions:	Line-marking
Indicative plant:	Truck, paver, roller

Bitumen spray seal, 2-coat

Treatment:	**SPR_RSSR**
Unit of measurement:	m^2
Summary:	Bitumen spray seal, 2-coat to local applied standard (including prime)
Description:	Preparation of the existing surface, supply, carting, heating and application of prime and spraying of bitumen seal (including cutter and additive), supply, carting, spreading and rolling of pre-coated aggregate, line spotting as required. Includes allowance for lapping of seal with existing.
Exclusions:	Line-marking
Indicative plant:	Truck, bitumen sprayer, roller

Clearing and earthworks

All clearing and earthworks treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Reference	Treatment	Unit
EXC_HVC	Clear mixed debris and remove from site	m^3
EXC_RSOS	Bulk excavate surplus material and remove from site	m^3
EXC_RSS	Bulk excavate surplus material to spoil	m^3
BKF_IMP	Bulk fill - imported	m^3
BKF_LOC	Bulk fill - local	m^3

Bulk fill

Where scour or loss of road or formation has occurred, a bulk fill item should be selected to reinstate the road to natural surface level (for unformed roads), top of formation (for formed roads) or top of road subgrade (for gravel and sealed roads or table drains).

Where material can be sourced within vicinity of the works, **Bulk fill - local** (**BKF_LOC**) should be selected.

Where material, consistent with that lost, is unable to be won within vicinity of the works, **Bulk fill - imported** (**BKF_IMP**) should be selected, allowing for the purchase of general fill and haulage.

For a gravel or sealed road, bulk fill items should be used to reinstate material to subgrade level, and an appropriate pavement treatment selected to reinstate the road to the pre-disaster condition.

Treatment:	varies (**BKF_LOC**; **BKF_IMP**)
Unit of measurement:	m^3
Summary:	Bulk fill to localised scours
Description:	Sourcing and cartage of bulk fill material (varies as per below), preparation of underlying material, placement, incorporation (where required) and compaction
Exclusions:	Bulk fill material should be selected consistent with the displaced/scoured material.
Indicative plant:	Excavator (or backhoe or loader), grader (where dispersed over large areas), truck, water cart, roller

Excavation

Where mixed debris (including rocks, gravel, sand or silt mixed with vegetation or rubbish) has been deposited on a roadway or drainage lines, **Clear mixed debris and remove from site** (**EXC_HVC**) should be nominated.

Treatment:	**EXC_HVC**
Unit of measurement:	m^3
Summary:	Clear mixed debris and remove from site
Description:	Clearing of mixed debris material, loading and removal from site.
Exclusions:	Reshaping of roadway or drainage lines
Indicative plant:	Excavator (or backhoe or loader), grader (where dispersed over large areas), truck

Where large deposits of silt have been deposited on the roadway or within drainage lines, **Bulk excavate** (**EXC_RSOS** or **EXC_RSS**) should be nominated.

Treatment:	varies (**EXC_RSOS**, **EXC_RSS**)
Unit of measurement:	m^3
Summary:	Bulk excavation of surplus material
Description:	Excavation of surplus material, loading and removal from site (**ESC_RSOS**) or to spoil (**EXC_RSS**)
Exclusions:	Reshaping of roadway or drainage lines
Indicative plant:	Excavator (or backhoe or loader), truck, grader (where dispersed over large area of roadway)

Concrete works

Damage to concrete may include scouring, undermining, structural cracking, or total loss as a result of large or intense rainfall events.

All concrete works treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Reference	Treatment	Unit
CON_KER	Reconstruct concrete kerb	m
CON_RCN	Reconstruct reinforced concrete	m^3
CON_RFC	Repair with flowable concrete	m^3

Reconstruct concrete kerb

Where damage to concrete kerb is suffered as a result of scour, or rendered unusable as a result works to underlying pavement, **Reconstruct concrete kerb** should be nominated. The kerb should be consistent with the pre-disaster kerb/adjoining sections.

Treatment:	**CON_KER**
Unit of measurement:	m
Summary:	Reconstruct concrete kerb
Description:	Saw cut and remove existing kerb. Prepare base and extrude/construct kerb. Backfill with suitable material
Exclusions:	Revegetation/turfing, removal/realignment of utilities.
Indicative plant:	Concrete saw, pavement breaker, bobcat/backhoe, kerb & channel machine, concrete agitator

Reconstruct reinforced concrete

Reinforced concrete assets include floodways, concrete batters, margins and footpaths. Damage to reinforced concrete assets including scouring, undermining, debris impact or total loss can occur during large or intense rainfall events. Where the damage suffered necessitates replacement, **Reconstruct reinforced concrete** should be nominated.

Treatment:	**CON_RCN**
Unit of measurement:	m^3
Summary:	Reconstruct reinforced concrete
Description:	Demolish and remove existing concrete. Prepare base, form and position reinforcing. Pour concrete, cure (where required) and finish surface. Backfill adjoining surface (where required).
Exclusions:	Revegetation/turfing, removal/realignment of utilities
Indicative plant:	Job truck, concrete saw, pavement breaker, bobcat/backhoe, and concrete agitator.

Repair with flowable concrete

Damage often results around bridges and drainage structures during disasters as a result of high velocity waters. **Repair with flowable concrete** may be used for filling of undermined reinforced concrete or for repair of grouted rock protection.

Treatment:	**CON_RFC**
Unit of measurement:	m^3
Summary:	Repair with flowable concrete
Description:	Pouring/pumping of flowable concrete to fill voids.
Exclusions:	Rock protection
Indicative plant:	Job truck, concrete truck, concrete pump

Drainage structures

Damage to drainage structures including scouring, undermining, debris impact, separation of units, silting or total loss can occur during large or intense rainfall events.

All drainage structure treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- the removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Reference	Treatment	Unit
CUL_RP	Repair drainage structure - excavate, repair and reinstate	m
CUL_SIL	Desilt drainage structure - removal of silt and debris	m^3
CUL_RBC<600	Replace RCBC, nominal span ≤600mm.	m
CUL_RBC<900	Replace RCBC, nominal span ≤900mm.	m
CUL_RBC<1200	Replace RCBC, nominal span ≤1200mm.	m
CUL_RBC>1200	Replace RCBC, nominal span >1200mm.	m
CUL_RCP<375	Replace concrete pipe ≤375mm dia.	m
CUL_RCP<600	Replace concrete pipe ≤600mm dia.	m
CUL_RCP<900	Replace concrete pipe ≤900mm dia.	m
CUL_RCP<1200	Replace concrete pipe ≤1200mm dia.	m
CUL_RCP>1200	Replace concrete pipe >1200mm dia.	m
CUL_RHW<375	Replace head/end wall ≤375mm pipe or RCBC	unit
CUL_RHW<600	Replace head/end wall ≤600mm pipe or RCBC	unit
CUL_RHW<900	Replace head/end wall ≤900mm pipe or RCBC	unit
CUL_RHW<1200	Replace head/end wall ≤1200mm pipe or RCBC	unit
CUL_RHW>1200	Replace head/end wall >1200mm pipe or RCBC	unit

Where access issues exist, or there is uncertainty in quantities or cost of works, a market price may need to be sought to establish an estimate of cost following design.

Repair drainage structure

Where separation of culvert cells has occurred, but no damage to the pipes eventuated, **Repair drainage structure** should be nominated. Repair drainage structure allows for excavation of the drainage structure, resetting of the units, backfill with suitable material (representing value for money) and reinstatement of pavement.

Treatment:	**CUL_RP**
Unit of measurement:	m
Summary:	Repair drainage structure
Description:	Excavate, repair and reinstate drainage structure, backfill with suitable material and reinstatement of pavement.
Exclusions:	Pavement seal, import of rock protection
Indicative plant:	Excavator, lifting equipment, truck, roller

Clearing of culverts, pipes and pits

Where a culvert has been blocked, **Desilt drainage structure** should be selected to remove the silt and debris from the culvert where it is not possible to undertake the clearing by an excavator or small plant.

Treatment:	**CUL_SIL**
Unit of measurement:	m^3
Summary:	Clearing of culverts, pipes and pits
Description:	Cleaning or flushing of blocked culverts from debris or silt by hand tools, water pressure blasting or pull-back/pull-through system.
Exclusions:	Import of materials, import of rock protection, removal of spoil.
Indicative plant:	Watercart, high pressure water blaster, generator

Replace concrete pipe/RCBC

Where replacement of a drainage structure is required, replacement of concrete pipe/RCBC should be to the same size/arrangement as per pre-disaster. Where replacement to pre-disaster size and arrangement is not possible due to current requirements of cover, or not economical (due to obsolete sizes or combination of pipes) a concrete pipe/RCBC arrangement with a cross-sectional area equivalent to the pre-disaster arrangement should be nominated.

Treatment:	various (**CUL_RBC‹600, CUL_RBC‹900, CUL_RBC‹1200, CUL_RBC›1200, CUL_RCP‹600, CUL_RCP‹900, CUL_RCP‹1200, CUL_RCP›1200**)
Unit of measurement:	m
Summary:	Replacement of concrete pipes/RCBC
Description:	Excavate and dispose of existing drainage structure. Prepare base, form and construct base slab (where required) supply and place drainage structure, replace sand band (where required), backfill with suitable material and reinstate pavement.
Exclusions:	Head/end walls (end structures), scour protection, pavement seals
Indicative plant:	Excavator/ backhoe, hydraulic breaker, lifting equipment, truck, roller, concrete truck, concrete agitator. Concrete vibrator, rotary screed & concrete pump (if required)

Replace head/end wall

Where a culvert/RCBC end structure has been dislodged or damaged by an activated event, or rendered unusable as a result of reconstruction work to the adjoining culverts, replacement of the head/end wall should be nominated.

Unless nearby concrete works (floodways, margins etc.) is being undertaken, it is often more economical to use pre-cast units. Where multiple cell arrangements are in-place, this may not be possible or efficient due to manufacturing time etc. It is the responsibility of the asset owner to identify the best value for money solution for replacing the head/end wall.

Treatment:	various (**CUL_RHW‹600, CUL_RHW‹900, CUL_RHW‹1200, CUL_RHW›1200**)
Unit of measurement:	unit
Summary:	Replacement of culvert/RCBC end structures
Description:	Remove and dispose of existing end structure. Prepare base, supply and install OR construct end structure, backfill with suitable material.
Exclusions:	Pavement works, scour protection
Indicative plant:	Excavator, hydraulic breaker, lifting equipment, truck, roller

Protection works

Damage to rock protection (including mass/dumped rock, rock pitching and rock mattress) can occur from result of high velocity flows, undermining or debris impact during large or intense rainfall events.

Subject to the ability to achieve value for money, damaged protection works should be restored commensurate with pre-disaster arrangements. Where reconstruction to pre-disaster arrangements is uneconomical (due to material or labour availability), or not feasible (due to obsolete construction techniques) contemporary techniques may be employed.

All protection works treatments include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- removal and re-instatement of roadside furniture (e.g. guide posts, signs etc.) as required
- preparation of work area
- placement of geotextile (where required)
- construction/placing of protection works
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws\

Reference	Treatment	Unit
RK_RKP	Rock protection	m^3
RK_STP	Repair stone pitching	m^2
RK_MAT	Construct rock mattress	m^3

Rock protection

Bulk rock for scour protection is commonly affected by large inundation or high intensity events due to its interaction high velocity waters. **Rock protection**, although low-tech, can be effective in mitigating against high velocity waters and requires limited preparation of the underlying surface prior to placement. Rock type should be selected subject to local availability.

Treatment:	**RK_RKP**
Unit of measurement:	m^3
Summary:	Rock protection works (bulk)
Description:	Preparation of work area, placement of geotextile (where required), recovery of displaced rock, placement of bulk rock.
Exclusions:	Pavement works
Indicative plant:	Excavator, truck

Where adequate sized rock in not economically viable, alternative solutions such as rock-mattresses may be considered.

Stone pitching

Stone pitching, whilst not commonly used in modern construction, is commonly encountered in older head-walls, margins, retaining walls and abutments. The extent of damage and the likely cost of repair needs to be considered. Alternatives such as shotcreting, gabions, rock-mattress, reinforced concrete or pre-cast elements may need to be considered where a repair option with stone pitching is not economically viable.

Treatment:	**RK_STP**
Unit of measurement:	m^2
Summary:	Repair stone pitching
Description:	Preparation of work area, cleaning of damaged area, supply and replacement of displaced or damaged stone and pitching.
Exclusions:	Pavement works
Indicative plant:	Truck, excavator, concrete agitator

Rock mattresses

Where bulk rock relies on its mass to withstand scouring waters, **rock mattresses** provide an alternative, able to utilise smaller rock through a caging system. Although more labour intensive, and requiring the purchase/manufacturing of cages, significantly less rock, and more easily sourced rock (due to size) may result in a value for money alternative.

Treatment:	**RK_MAT**
Unit of measurement:	m^3
Summary:	Installation of rock-mattresses
Description:	Preparation of the work area, placement of geotextile (where required), supply and installation cages, recovery of displaced rock, filling and wiring of cages.
Exclusions:	Pavement works
Indicative plant:	Excavator, truck

Note: Environmental conditions leading to corrosion of the cages/wires and estimated flow velocities (with potential to lead to failure of the cage or bunching of the rock) needs to be considered during specification.

Road furniture and delineation

Road furniture is often damaged during natural disasters as a result of flood waters or debris impacts. Where damage has occurred to road furniture, the number of units replaced should be commensurate with the pre-disaster arrangements, however a current standard of the pre-disaster system/item should be used.

All road furniture works include the following work operations:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of work area
- removal of damaged road furniture
- re-instatement of roadside furniture
- clean up of the site and disposal of any waste/removed material in accordance with applicable State Government legislation or Local Government by-laws

Following restoration of sealed pavements, line-marking is generally required. Line marking should be consistent with either the adjoining sections of road or the pre-disaster arrangement.

Reinstate line-marking includes the following work operations:

- establishment and disestablishment of traffic control
- determination of work area
- cleaning the pavement in the work area (as required)
- spotting/symbolising
- application of marking material

Reference	Treatment	Unit
RFD_RGET	Replace guardrail end treatment	each
RFD_RG	Replace guardrail	m
RFD_RP	Replace guide posts or markers	each
RFD_RRS	Repair road signage	each
RFD_RSF	Replace sign face only - standard road sign	each
RFD_RCS	Replace sign (complete) - standard road sign, includes post	each
RFD_RLN	Reinstate line marking	m

Where a depth marker or similar has been damaged or destroyed, select **Replace sign (complete**) (**RFD_RCS**).

Other

Where works require engineering investigations/testing or detailed design, **OTHER** should be nominated. This includes landslips, coastal protection, structures, gabions, shotcreting etc.

Reference	Treatment	Unit
OTHER	Other - including structures, retaining items	lump sum

Specifics of the scope should be outlined and priced by the applicant for consideration.

APPENDIX C – SET OUT PEG TEMPLATE

Peg Information Layout

QRA Submission and Line Number

Start Chainage

Finish Chainage

Quantity / Unit
(Damage in unit of measure + length)

Treatment Description Abreviation

Direction Of Work From Peg Location

SHEPHERD
asset management solutions